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ATARI USER

Vol. 2 No. 8 December 1986 £1

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Atari games: The all-time greats revisited

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- **PRINTER SPOOLER:** This utility makes it possible to use your computer while you are printing. A section of the computer's memory is reserved for printing, and information is stored there. The information is transferred to the printer when needed without interrupting other operations of the computer.
- **RAM DISK:** This utility will speed up your file operations, saving you hours of time. Robtek's Ram Disk will reserve a portion of memory as a software image of a disk drive. Not only is this faster but also more reliable as there are no mechanical parts.
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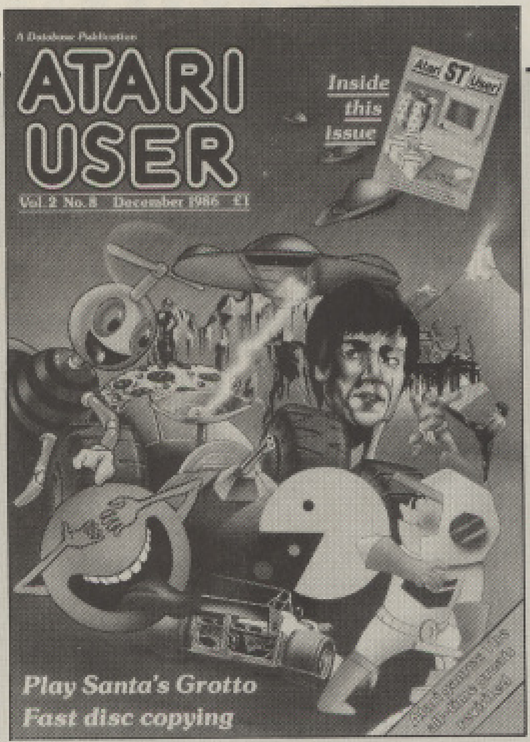
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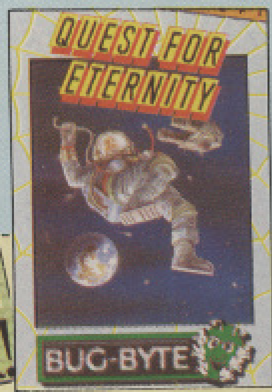
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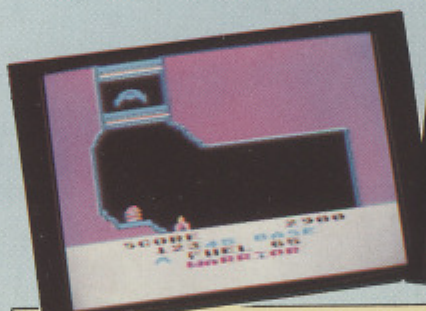
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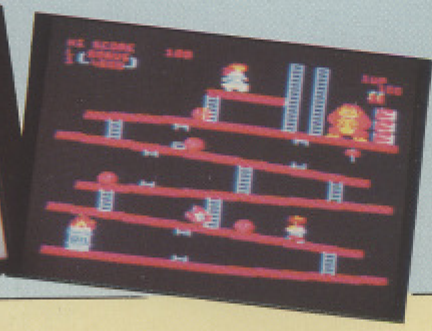
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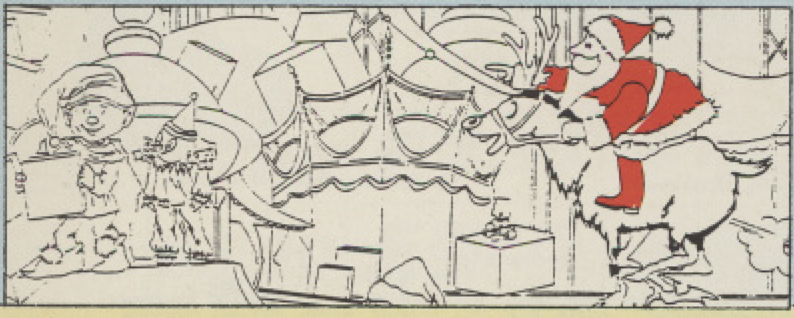








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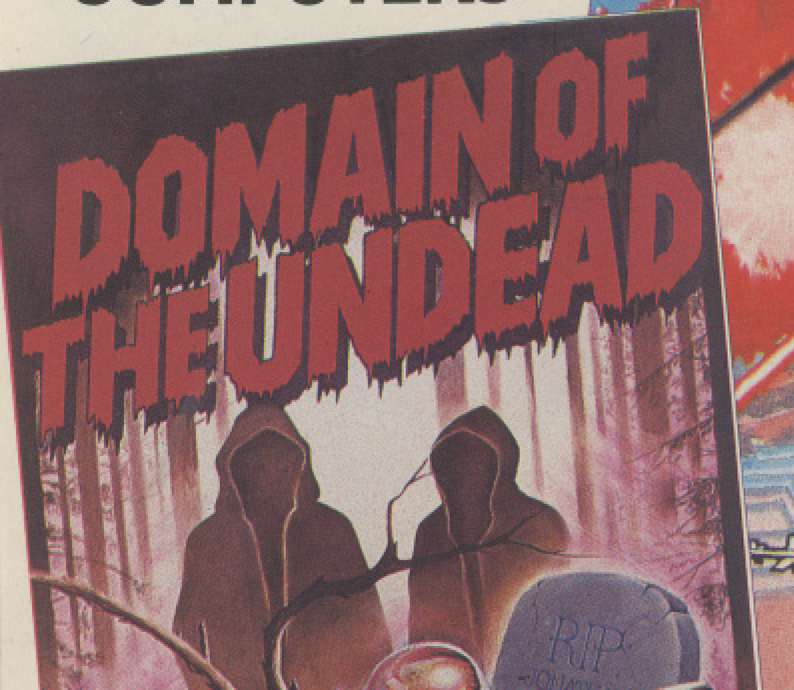
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Triple mode design

THE new Atari 7800 plays all Atari 2600 games without requiring an adapter, and its open design allows it to accept a wide range of peripherals.

The system memory has two 2k x 8 bit static ram chips and one 16k x 8 rom.

Ram chips are selected using the signals RAMCS2bar and RAMCS1 bar segregated in the Maria graphic chip.

The machine runs in three distinct modes – internal and Maria modes and 2600 compatibility mode.

The system automatically decides which mode to run in, depending on the cartridge plugged into the slot when power is turned on.

Audio in the 7800 system always comes from the custom TIA chip, possibly mixed in with the EAUD signal from the cartridge.

The video may come from either of two sources, TIA or Maria. When running in compatibility mode the 7800 system turns off the Maria chip and all video outputs remain low.

The keyboard connects via the joystick port. Vertical resolution in pixels is 320 by 192.

"The machine offers improved graphics and game play compared with the 2600 system, and competitive performance versus the XE line", says Atari.

"It doesn't require an adapter to play 2600 cartridges and it will be launched with a full line of hit software titles".

Show debut for games machine

AN exciting new Atari games machine will be unveiled at the Atari Christmas Show in London.

The Royal Horticultural Hall, Westminster, has been chosen as the venue for the UK launch of the Atari 7800 – less than a month after its debut in America.

Atari describes the newcomer – which is expected to carry a price of £69.95 – as "a reaffirmation of our commitment to the games market".

The machine is intended to answer long standing criticism that the company has been neglecting its loyal army of games enthusiasts in favour of its upmarket operations – in particular the ST series.

The new machine, which is due in the shops before Christmas, is expected to revitalise Atari 8 bit software production.

"A large number of new games will be available by the time the 7800 arrives in the shops", an Atari spokeswoman promised.

"Software houses are clamouring for development kits and plenty of software will be coming in from US developers".

The 7800 will be the centrepiece of Atari's major presence at the Christmas Show which runs from Friday, November 28 to Sunday, November 30.

The company has promised that visitors will be able to enjoy hands-on experience of the new machine as well as getting a chance to see its superb graphics.

Bargains

"Atari has been accused of ignoring 8 bit users in favour of the 16 bit ST, but they have not been forgotten", new UK general manager Bob Gleadow told *Atari User*.

"We have new software for them and this will be on display at the show".

Altogether more than 100 stands will be loaded with new products and bargain buys from the leading Atari suppliers.

The spacious 20,000 sq ft exhibition hall will play host to big names like Software Express, Twillstar, CDS, Microdeal and Advanced Systems & Techniques as well as Atari itself.

This means the location is likely to see a repeat of the scenes at the first Atari Computer Show last March, which attracted 15,000 visitors.

Latest news of product launches at the show includes Procopy from The Moving Finger Company.

This back-up utility lets users make working copies of all their ST software, as well as formatting and copying discs, and costs £34.95.

Eidersoft will be offering two co-ordinated graphics and sound packages for the ST – Prosprite Designer, price £39.95, and Prosound Designer at £49.95.

The firm is also launching Minicom, a new comms package offering access to both Prestel and Telecom Gold as well as supporting Xmodem and Kermit protocols. Price £29.95.

Eidersoft single and double floppy drives for the ST will be available for £125 and £199. A 20Mb hard disc unit incorporating fully Gem co-ordinated software and desktop accessories costs £599.

NEW UK SALES CHIEF

ANOTHER former Commodore executive has joined the Atari UK management team.

Paul Welch has been appointed UK sales manager, a position similar to the one he held at Commodore before leaving a year ago to become a mail order software dealer.

Welch follows former Commodore colleague Bob Gleadow to Atari. Gleadow, now Atari UK general manager, was Commodore's UK general manager when Welch joined the company in 1981 as national accounts manager.

The two men struck up a rapport at Commodore and it was Gleadow's recent move to Atari which tipped the scales away from two other attractive job offers Welch was considering.

Interviewed by *Atari User*, Welch revealed he had been offered the Atari sales boss position two years ago but had turned it down.

"Now that Bob Gleadow has joined Atari it's a different proposition", he said.

"We had a good working relationship at Commodore and I'm sure we can make things happen for Atari.

"We intend to make Atari the prominent brand in the UK micro market once more, concentrating on ensuring our machines are fully supported by top quality products".

ALL program listings in *Atari User* are now available for free downloading on MicroLink, the UK's fastest growing electronic mail service. They join hundreds of programs already available in the telesoftware section, one of the most popular areas of MicroLink.

HOMEVIEW

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Tracker	£17.95	£33.95	£59.95	£8.95
Mimic	£22.95	£43.00	£78.00	£10.95

Locking Disk Box – holds 100 **£11.95** or just add **£10.00** when purchased with 50 or 100 of the above disks.

8 BIT DISC SOFTWARE

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Art DOS – Load special character sets or microscreen graphics direct to your screen. Comes with 20 character sets which can be incorporated into your own progs. **£4.95**

130XE Hi-Res Designer – Requires 128K RAM. R. DRAW is a powerful mode 8 paint program. Functions include spray painting, auto artifacting, 4 text sizes and many more. **£4.95**

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Mitsubishi MF.2DD **£23.95** box of 10 – 2 boxes only **£44.95. Locking disk box** – holds 60 **£11.95** or just add **£10.00** when purchasing with 25 or 50 of the above disks.

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BUMPER TO BUMPER

CLASSIC pinball with a difference gets the arcade video treatment in Pinball Factory from MichTron for the Atari ST.

In addition to the game of pinball, players can also design, build and edit their own screens.

They can create their ideal pinball machine, choosing from a multitude of bumpers, tabs and other devices and placing them wherever they like.

Then, using a graphic drawing system, walls and solid barriers can be added.

The playing board can be illustrated with pictures, arrows and other designs which the ball will pass over during play.

Any of the ST's 16 pallette colours can be changed as desired using the built-in art program, and there is a choice of more than 500 different shades.

Designs can be saved and loaded to disc. Price, including sample ready-to-play screen, $39.95.

Easier payrolls

A PAYROLL package for the Atari ST has been released by Kyle Data.

Kyle-Wages is designed so that all PAYE, National Insurance and statutory sick pay information need only be updated once irrespective of the number of payrolls on the system.

Separate weekly and monthly payrolls for a number of companies can be held on the same disc.

Each payroll has its own files and password protection but all share system, PAYE, NI and SSP parameters.

A variety of payment terms, periods and methods is possible. Employees can be salaried or hourly paid and payments can be made weekly or monthly by cash, credit transfer or cheque.

Standard payments and deductions are held on file, and pay details can be entered manually or automatically. Price £195.

ON-LINE TO NORTH POLE

MESSAGES to Father Christmas need not depend on the efficiency of the postal service this year.

To ensure that every child can contact him before the big day, the jolly old fellow has gone on line up at the North Pole.

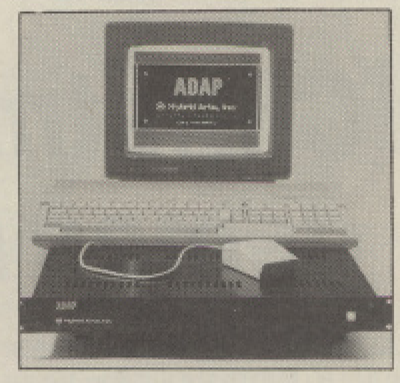
Equipped with an Atari micro no less, Santa has hooked up his workshop to the giant MicroLink computer in the UK.

Now all the kiddies – or their parents – have to do to contact him is to transmit their message via micro and modem.

SantaLink is the latest service being offered through the country's fastest growing electronic mail and messaging system.

All MicroLink subscribers have to do is type SANTA at the prompt when they go on-line, and then enter their message. The system takes care of the rest. And Father Christmas guarantees that every message sent to him will get through – and be answered personally – right up to Christmas Eve when he leaves to deliver everyone's presents.

Package for pros



A MUSIC sampling system for the ST has been launched by Syndromic Music.

The ADAP (Analog to Digital, Audio Processor) SoundRack allows the user to store up to 64 multi-samples in memory for instant playback and incorporates real-time digital effects processing – delay, echo, reverb and envelope-following. The package, which is aimed at music, video and broadcast professionals, is already used by top artists Chicago and the Pointer Sisters.

Price £2,499.

24 HOUR TURN ROUND

A NEW concept in electronic publishing from Lightning Graphics allows Atari ST users anywhere in the country to buy Scantext digital typesetting for as little as £5 per A4 page.

It is intended for companies and individuals involved in graphic design, printing and publishing who cannot afford the cost of high quality traditional typesetting.

Access

Lightning offers training and a manual along with £100 worth of free typesetting and access to its electronic mail system.

Text is keyed in conventionally on the micro and instead of marking up the copy the user inserts special codes supplied in the manual.

These codes signify typical marking up functions such as type size, type face and line length.

Copy is sent via electronic mail directly on to Lightning's Scantext typesetting system.

Once processed – 24 hours is the normal turnaround – bromide printouts are sent back to the client by post or special courier.

Data back-up

ATARI software producer MichTron has brought out a utility providing data back-up protection for ST hard drive owners.

Backup duplicates the contents of the user's hard drive to floppy discs, minimising the risk of loss.

It also lets the user restore the floppy back-ups to the hard drive.

Backup uses Gem pull-down menus to offer numerous options with different types of mouse controlled back-ups and restores.

Intelligent routines give the choice of making full back-ups of the entire hard drive, back-ups of newly created or modified files, or back-ups simply by date.

The user can make an "image" back-up, transferring logical sectors to counterpart floppies. Price $39.95.

All set to move up

ATARI believes it is poised to move into fourth spot in the UK micro sales chart.

Elated executives at the company's HQ are celebrating industry reports that Atari 8 bit machine sales will soon displace the Commodore 16 in the rankings.

"Latest figures show we are only a fraction behind fourth place right now", a spokeswoman told *Atari User.*

"We're confident that the current trend will continue and we'll be challenging Amstrad for third place soon.

"The overall picture confirms the progress that Atari has made to regain its pre-eminent position in the UK micro marketplace.

"Naturally we're all delighted to hear that independent industry research portrays us in such a favourable light".

Record release

A MANAGEMENT system for C programmers using the Atari ST has been released by Microdeal.

Easy Record handles up to 16 indexed record files at one time, with eight key fields in each record file and eight subfields in each key field.

Each key field has a maximum of 123 bytes.

The system allows record access through a variety of logical functions and has a fast, multiway, random record storage facility.

Transaction processing allows related files to be kept consistent with start, end and undo transaction functions.

Easy Record allows specification of key fields, duplicate key field values, creation of files from existing open files, and creation of files from definition files and/or blocks.

It also allows integer, unsigned, long, float, double, string and case independent string key data types, and C source code is included. Price £39.95.

Also new from Microdeal for the ST is Mighty Mail, a comprehensive mailshotting database with GEM pull down menus priced £29.95.

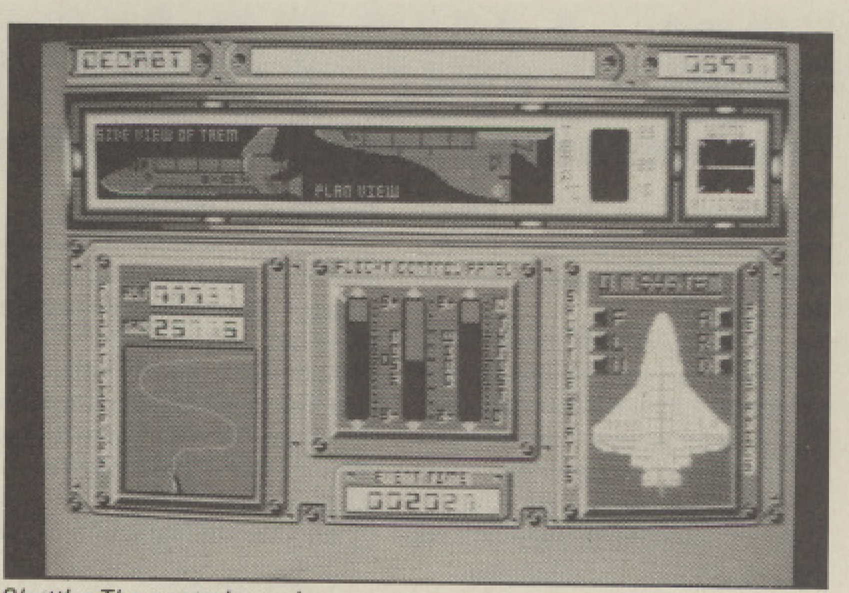
Movie music

SPECIALIST in computer software for the music industry, German-based Steinberg Research has begun distribution operations from new premises in Oxfordshire.

It has also announced its first product for the Atari ST, an aid to synchronising music in film and television studios.

Called the SMPTE – Society of Motion Picture and Television Engineers – generator, it will be totally interactive with the revised Pro-24 program – a midi event recorder – and connect to the ST via the RS232 port.

The company claims this combination will set new standards in sequencing from time code. The SMPTE generator itself will be available separately for about £600.



Shuttle: The control panel

Christmas games roundup

A VERSION of the hit arcade game Gauntlet has been released for the ST by U.S. Gold.

The game, which generated a lot of excitement when released in its original coin-in-the slot format last year, offers multiplayer capabilities as well as sophisticated graphics.

A choice of four characters is available with 150 levels of difficulty.

The object is to combat waves of attacking monsters while competing for food, treasure and magic potions. Price: £24.99

Also new from U.S. Gold is the first in a series of Mastergames compilations

Shoot 'Em Up for the Atari 8 bit series features four previously released titles – Super Zaxxon, Dropzone, Blue Max 2001 and Fort Apocalypse. Cassette price: £9.99.

★★★

THE first two in a series of Level 9 trilogies have been released for the ST and 8 bit machines by Rainbird Software.

Extensively re-written, Jewels of Darkness comprises three of the most popular Level 9 ST adventures – Colossal Adventure, Adventure Quest and Dungeon Adventure.

The second package, Silicon Dreams, features Snowball, Return To Eden and Worm In Paradise, all running on the 8 bit range as well as the ST.

Both packages come complete with a 64-page novella incorporating a 12-page playguide.

Jewels of Darkness is available on disc, price £19.95. Silicon Dreams is available for the ST on disc, price £19.95 and for the 8 bit series on disc or tape for £14.95

★★★

FOUR new ST games have been released by Microdeal.

Electronic Pool is a colourful video pool game featuring a high score table, realistic sound effects including rag-time music. Price: £19.95.

Pinball Factory allows the user to customise his own pinball games and save them to disc. Incorporating graphics, fast action and sound it costs £24.95.

Shuttle is a graphic simulation of the NASA spacecraft. Featuring music from the film 2001 A Space Odyssey, the package costs £24.95.

Karate Kid II is the game of the film.

As Daniel LaRusso the player must battle against powerful adversaries, finally meeting the evil Chozen in the castle of King Shohashi where the secret of the drum must be discovered.

The program features full-size animated screens and costs £24.95.

★★★

LATEST release from Domark for the Atari 8 bit series is a version of its bestselling package Trivial Pursuit Genius Edition.

Offering all the facilities of the popular board game together with animated graphics, the program is available on disc at £19.95 and cassette at £14.95.

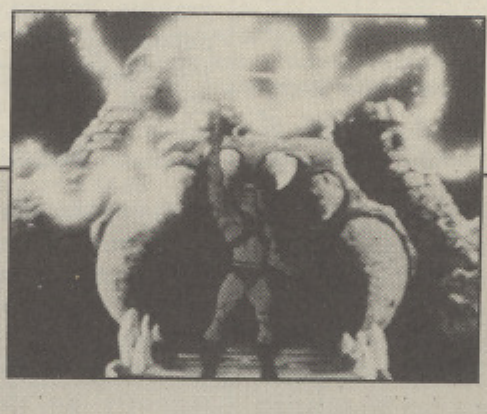
A Young Players Edition is also available for the XL and XE at the same prices.

★★★

AN adventure question time for users of Level 9 software is to be held in Reading on Saturday, December 13.

Owners of 8 and 16 bit machines are invited to attend the forum where Level 9 representatives will be offering adventure hints and tips and giving away free gifts.

The event will be held between 11am and 1pm at the Ordem Computer Store, Harris Arcade, off Friar Street in Reading.



CARTOON favourites from the popular Master of the Universe television shows will feature on new software for the Atari ST.

A licensing deal has been signed by Mattel and US Gold to bring out separate arcade and adventure versions of a game starring He-Man, Battle Cat and Teela in their fight against the evil Skeletor.

An event NOT to be missed!

Atari Christmas Show

Royal Horticultural Hall
Westminster, London SW1

Friday November 28 10am-6pm
Saturday November 29 10am-6pm
Sunday November 30 10am-4pm



The first ever Atari Show last spring was an outstanding success. From all over Britain Atari enthusiasts flocked to London to find out all they could about their favourite machine.

Soon the record-breaking Atari Show will be back – with three days devoted to the exciting developments in this expanding market. Make a note in your diary NOW to make sure you don't miss this great Christmas extravaganza!

- ★ All the latest software from publishers in both the UK and USA
- ★ New hardware releases from Atari and other major companies
- ★ Experts from Atari User and Atari ST User to answer your questions
- ★ Experience the fascinating world of computer communications
- ★ Everything on show from stocking fillers to complete Atari systems

They'll all be there! Games consoles, 8 bit machines . . . the entire ST range!

Whether you're a new user or a seasoned addict, you'll find the show overflowing with ideas to help you expand your computing horizons!

This is YOUR chance to meet top people in the world of Atari. Among them will be experts from:

Atari UK
2-Bit Systems
Aaronfay Marketing
Advanced Systems & Tech.
Amten
Anco Software
Atari User/Atari ST User
Centec
Colleen
Computer Bookshops
Computer Concepts
Computer House
Demon Software
Direct Disk Supplies
Electric Studio
Eidersoft
First Software
GEM Distribution
Gultronics
HSV Computer Services
JB Software
Kirk Automation
Llamasoft
Metacomco
Microdeal
Micro Media Comp. Supplies
Mikes Computer Stores
Miniature Tool Company
Monitor
Moving Finger Company
Overbase
Page Six
Pyramid Video Software
Red Rat Software
Robtek
Silica Shop
SJB Disk Supplies
Software Express
Software Store
Sth West Software Library
Syndromic Music
Try Bridge
Twillstar Computers
Supertec
Tynesoft
Ultron
Vulcan Electronics

Bring this coupon to the Show to get 50p per person off the normal admission price of £3 (adults), £2 (children).
Valid for up to four people.

50p OFF

ATARI CHRISTMAS SHOW

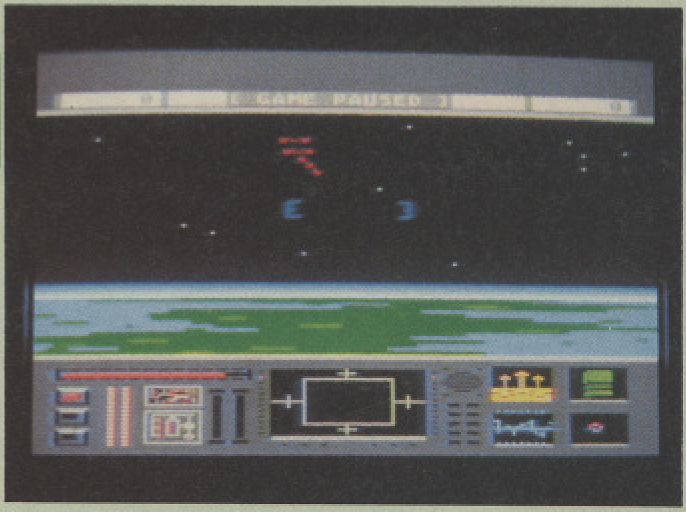
Friday, Nov 28, 10am-6pm
Saturday, Nov 29, 10am-6pm
Sunday, Nov 30, 10am-4pm

New Horticultural Hall
Westminster, London SW1

AT12

Nearest Tube / Main line station: Victoria. Ample car parking nearby

Good as new



Program: Star Raiders II
Price: £14.95 (disc only)
Supplier: Atari, c/o SDL, 1-4 The Mews, Hatherley Road, Sidcup, Kent DA14 4DX.
Tel: 01-309 1111

STAR Raiders was introduced in 1979 when the Atari 400/800 machines were launched, so Star Raiders II represents a landmark in Atari history.

Does it shape up, is it worth buying the new one and is it as good as the original?

The answer is yes, but don't buy it expecting a carbon copy game with flashier graphics as it's a modified version of the unreleased The Last Starfighter.

Seven years on and the Zylons are up to their old tricks, this time with better weapons. They have improved their defences and have the capacity to introduce more ships into the fray.

To defeat them you will have to protect the cities of the Celos IV star system and destroy the attack bases of the Procyon star system, where the Zylons build their new ships.

Each star system has a number of planets with cities or attack bases and to succeed you will have to warp between and around the systems.

There is a new graphic representation of the star systems, with planets, moons and suns, looking more like pages from a colour encyclopedia than a computer game.

Also shown are space stations and Zylon squadrons in transit.

When you select a planet on the System Chart you're given a lot of information, including the number of cities or attack bases there, the type of terrain and the number of enemy ships surrounding it.

When you warp there the planet is represented as a scrolling landscape below you.

Liberty Star doesn't handle too well in combat. She doesn't seem to turn at all and there is no aft view.

She won't pull up or dive when engaging enemy ships and you can't adjust your speed in deep space.

The Zylon ships tend to present themselves to be shot down so there is no hunting in this game.

A different type of enemy ship appears when a predetermined number of lower types are destroyed.

Be careful – I have often hit a Fly Fighter, seen it catch fire, and then had it fire back at me in its death throes.

Docking is fully automated, which is just as well as your ship has very small fuel tanks.

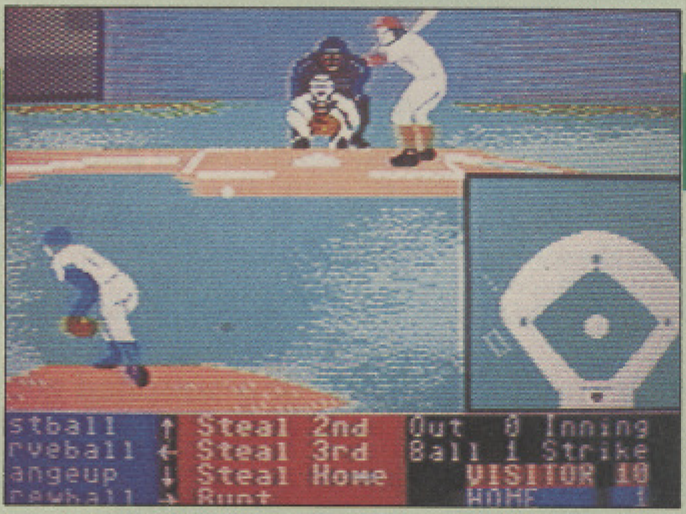
Refuelling and repairs take a large portion of your time but there is no penalty (save losing a city or two) at judgement time.

I heartily recommend this game, probably the best to have appeared since Star Raiders I. The number of tasks involved mean that any limitations are satisfactorily overcome.

Rob Anthony

Sound	9
Graphics	9
Playability	8
Value for money	9
Overall	9

Pitching it right



Program: Hardball
Price: £7.95 (cassette) £11.95 (disc)
Supplier: US Gold, Unit 2/3, Holford Way, Holford, Birmingham, B6 7AX.
Tel: 021-356 3388

HARDBALL is the first simulation for the Atari of the very popular American sport, baseball.

On loading, a series of choices are presented, covering two player and computer versus player games. A management screen details team members and offers the opportunity to substitute men or move them about the field. Action then passes to the main screen which is split into two sections.

The upper half shows the pitcher and the batter, with the catcher and the umpire (who looks like an overgrown gorilla) behind the batter.

On the right is an inset diagram of the whole pitch on which the running men may be seen.

The lower portion of the screen gives details of the scores and displays the batting and pitching choices in large red and blue boxes.

Each player chooses a batting or pitching method by using his joystick and pressing the fire button.

The pitcher then chooses where to place the pitched ball and the catcher will move his glove to the relevant position.

The ball is pitched and the batter now has to try and hit it by choosing a direction with the joystick and swinging the bat by pressing the fire button.

If he hits the ball, a half view of the field appears showing the running men and the fielders chasing the ball.

If he misses, the umpire will call Strike and, providing the batter has had less than three strikes against him, another pitch may be made. After three strikes a batter is out.

After three dismissals the whole team is out and the teams change over. The game ends when both teams have batted nine times.

Music plays throughout the game, and although you can't turn it off, there are several different tunes.

Graphics are brilliant, especially the movement of the pitcher. However it is very difficult to play at first, and takes several hours of practice to hit the ball regularly.

Stephen Foster

Sound	10
Graphics	10
Playability	4
Value for money	7
Overall	7

South Pacific



Program: Screaming Wings.
Price: £7.95 (cassette), £9.95 (disc).
Supplier: Red Rat, 15 Fennel Street, Manchester M4 3DU.
Tel: 061-835 1055

IF you've ever fancied yourself as a pilot taking on hordes of enemy aircraft single-handed then this is your type of game.

Fans of the arcade game 1942 will no doubt notice more than a passing similarity, although the enemy seem to have adopted different attack tactics.

You command a Lockheed Lightning Fighter, taking on the waves of Japanese fighters and bombers that come swooping in as you patrol the South Pacific.

You take off from your carrier at the start of each level and land again before the next – providing you survive.

Destroying certain planes gives you limited extra firepower or Destructor Smart Bombs.

Your plane can also perform up to three loops to get out of those awkward little situations, but you do get an extra bonus for keeping them.

As these are operated by the spacebar you usually end up not being able to use them to any great advantage anyway.

The larger fighters take a bit more killing and the bomber almost refuses to be shot down, which means using different strategies on different planes.

Fortunately all is not lost, for occasionally you are joined by another plane which acts as a shield for a while – who said chivalry was dead.

Joystick response is good although I felt the plane was a bit restricted as it is confined to the lower quarter of the screen.

The game is quite addictive, with a definite feeling of "just one more go" whenever you lose all your lives.

Graphically the game falls down a bit – the planes are rather uninspiring, especially your own.

The background is quite well designed and scrolling is very smooth, and the planes swoop and turn quite convincingly.

Some planes seem to have the ability to fly backwards (pretty clever, these Japanese), but this doesn't really detract from the game.

Sound effects are good but an unimaginative tune plinks away in the background. However, you can turn the tune off but leave the sound effects on.

Overall Screaming Wings is a fairly average shoot-'em-up.

It'll keep you occupied for a few hours but the lack of variety in later screens and having only one level means once you have played it a few times the appeal fades.

At the price it's worth trying it out before parting with your money.

Mark Fowlis

Sound	8
Graphics	7
Playability	8
Value for money	7
Overall	7

Humble servant



Program: The Slave
Price: £19.95 (disc)
Supplier: N.J.Gregory, 8 Agard Street, Derby, DE1 1DZ (mail order only)

THE Slave is a suite of programs which allows you to write an adventure of up to 170k, which will then reside on one side of a disc.

First you should map out your adventure on paper, ensuring it is as close as possible to how you wish it to turn out – testing and correcting your adventure is not the easiest thing to do.

You can now define your location descriptions (which can be up to a full page of text), messages, objects, and verbs/nouns – up to 255 of each.

An excellent feature, Examine, is available to provide a more detailed description of an object if necessary.

Each verb or noun can have several synonyms, thereby increasing the vocabulary.

The Exits editor allows up to 10 exits to be defined for each location.

If you have ever written or attempted to write an adventure, you will know of the usefulness of flags. Well The Slave is equal to the task with the ubiquitous 255.

Some are pre-defined, for example the number of objects carried.

Now comes the hard work!

To solve your adventure, a player will require actions/replies to the commands he enters. To write the logic for these responses you are given SAL, The Slave Adventure Language.

SAL is a language akin to a powerful Basic. It has 73 main commands but these can be combined to give over 244 variations, some of which enable you to introduce sound, music and colour changes into your masterwork.

After you have produced all the necessary files, you are shown how to bring them all together to form the finished adventure.

The Slave also includes a debugging program and a facility to design a simple title page using Graphics 0 characters.

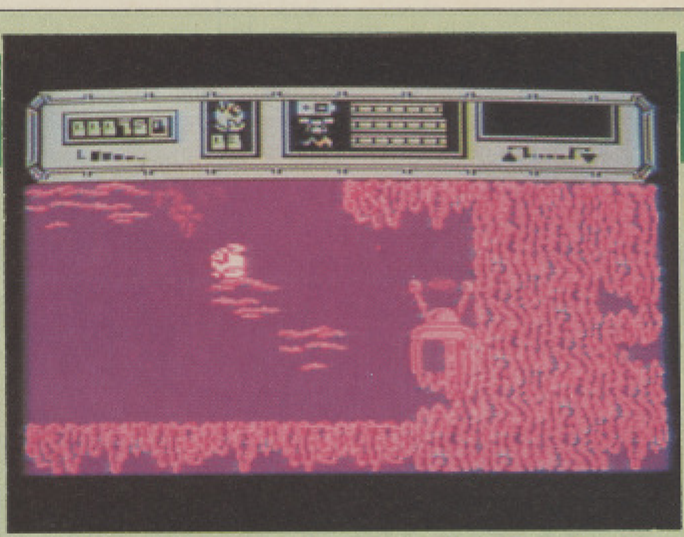
The 126 page manual, although well written and at times amusing, is occasionally difficult to understand but careful re-reading will eventually clarify any points of doubt.

All in all The Slave is excellent value, and a must for any budding adventure writers.

Ken Grassham

Ease of use	7
Content/Facilities	10
Documentation	8
Value for money	10
Overall	9

Classic mould



Program: Starquake
Price: £8.95 (cassette) £12.95 (disc)
Supplier: Bubble Bus, 87 High Street, Tonbridge, Kent TN9 1RX.
Tel: 0732 355962

COME on, admit it. There must have been a time or two when you've cast an envious glance at those arcade adventures from Ultimate for the Spectrum and wished they were available for your Atari.

Be jealous no more. Bubble Bus has produced Starquake, an original program but one that that is graphically very much in the mould of those earlier Ultimate classics.

You control Blob, an owlish little dumpling who must scour the caves of an alien planet and amass various items.

The planet's core has gone critical – Blob's job is to find it, fill it with the right objects and thus stabilise it. Ah, the wonders of modern technology!

Blob is delightfully animated, scurrying this way and that along terra firma as he explores the caverns.

Being subject to the normal rules of gravity, when he trundles off the edge of a precipice he falls until he meets the ground again. No damage is done unless he strikes something nasty on the way down.

His freefall can be slowed by pulling back on the joystick. This causes a small platform to appear under him and stop him dead.

This facility can also be used on the ground – fast and repeated pulling back on the joystick erects a ladder of these dissolving platforms which can be used for getting at otherwise inaccessible places.

Blob can also get airborne by alighting on what looks like a white breeze-block. Once on it, he can fly merrily around the caverns.

Another fast way of travelling is by using one of the transporter booths. To activate, you must guide Blob into a booth, type in the code of any of the other booths and bingo – he's there.

There are hundreds of different caves, each one a separate screen. Wander off the edge of the screen and another pops up.

The caves are filled with alien vegetation, machinery and neatly animated flying foes.

Energy is lost each time Blob is touched by an alien (but he can zap them), and he loses a life if he blunders into such fatal items as sparking machinery or a spiked plant.

Blob has 5 lives and a limited amount of energy, zap and platform-building power.

Everything about Starquake impresses, from the title screen to the high-score table, from the use of colour and sound to responsiveness and playability.

Bubble Bus has produced a superb game. Starquake is top-notch fare, quality dripping from every byte.

Bob Chappell

Sound	8
Graphics	10
Playability	9
Value for money	10
Overall	10

Modest tasks



Program: Quest For Eternity
Price: £2.99
Supplier: Bug-Byte, Liberty House, 222 Regent Street, London W1R 7DB.
Tel: 01-439 0666

FANCY doing something unusual today, like becoming an overlord of the universe? That's the modest task this text adventure sets you.

To achieve your ambition all you have to do is get an out-of-order teleport booth back in working order.

The snag is that this booth is situated on a somewhat hostile planet over 2000 light years away.

You start onboard the starship Nebula which is itself out of action – does nothing work in this part of the galaxy? Finding out how to get the ship going is your prime task.

On the flight deck there's a control panel, terminal and viewscreen but try as you might, there doesn't seem any way of bringing them to life.

Up by the main drive units the deflector's irradium level seems pretty low – perhaps that's something to do with it.

A large crate in the hold possibly holds a clue but how do you get it open?

You could always try leaving the starship via the airlock but that results in suffocation through lack of air.

Wearing a discarded space suit doesn't help, either – its air level is zero. This opening sequence should give you plenty to think about.

The display is fairly conventional. Your location, possible exits and visible items are described in the top half of the screen while input and responses appear in the lower half.

There's no scrolling – the screen clears each time you execute an action that carries a positive result.

The game's vocabulary consists of 99 verbs and 162 nouns, commands being of the usual verb-noun format.

If a command is not recognised by the program, it helpfully tells you whether it is the verb or the noun that is not understood.

The descriptions are fairly detailed and there are over 70 locations to explore.

The text is literate, the game well organised and, despite the program being written in Basic, response time is fast.

Quest For Eternity is an enjoyable if unoriginal adventure. At the price, well worth buying.

Bob Chappell

Sound	n/a
Graphics	n/a
Playability	7
Value for money	8
Overall	8

Four channel model controller

Part 7 of LEN GOLDING's series on using your Atari to control devices

If you've ever wanted to link your Atari to Lego and Meccano kits, slot-car racers, miniature railways or computer-driven buggies this model controller is for you. It can even handle your Christmas Tree lights!

The controller provides independent on/off switching for up to four motors, relays, solenoids or other low-voltage devices. It can also operate as a four-channel speed controller, or as a two-channel reversing switch so you can make a buggy move forwards, backwards, left or right at different speeds under full software control.

Each channel can drive a dozen torch bulbs for childrens' disco displays – including chaser lights – and there are even some limited applications in robotics.

Figure I gives the circuit in schematic form. Each of the four outputs is driven by a two-transistor power switch which enables the tiny currents and voltages from the joystick port to control currents of up to 5 amps and voltages of up to 24V at the outputs.

We explained transistor switching action back in the second article of this series (*Atari User,* July 1986).

Figure II shows the printed circuit board pattern for those of you who want to etch your own but, as usual, a commercially-made PCB is available from RH Design.

The component layout is shown in Figure III and construction is very straightforward so that anyone can attempt it. Start by soldering the resistors and diodes, making sure the diodes are connected with their silver bands to the top. Then fit the BC108 transistors and all connecting blocks.

Bend the leads of each TIP127 transistor at right angles and spread

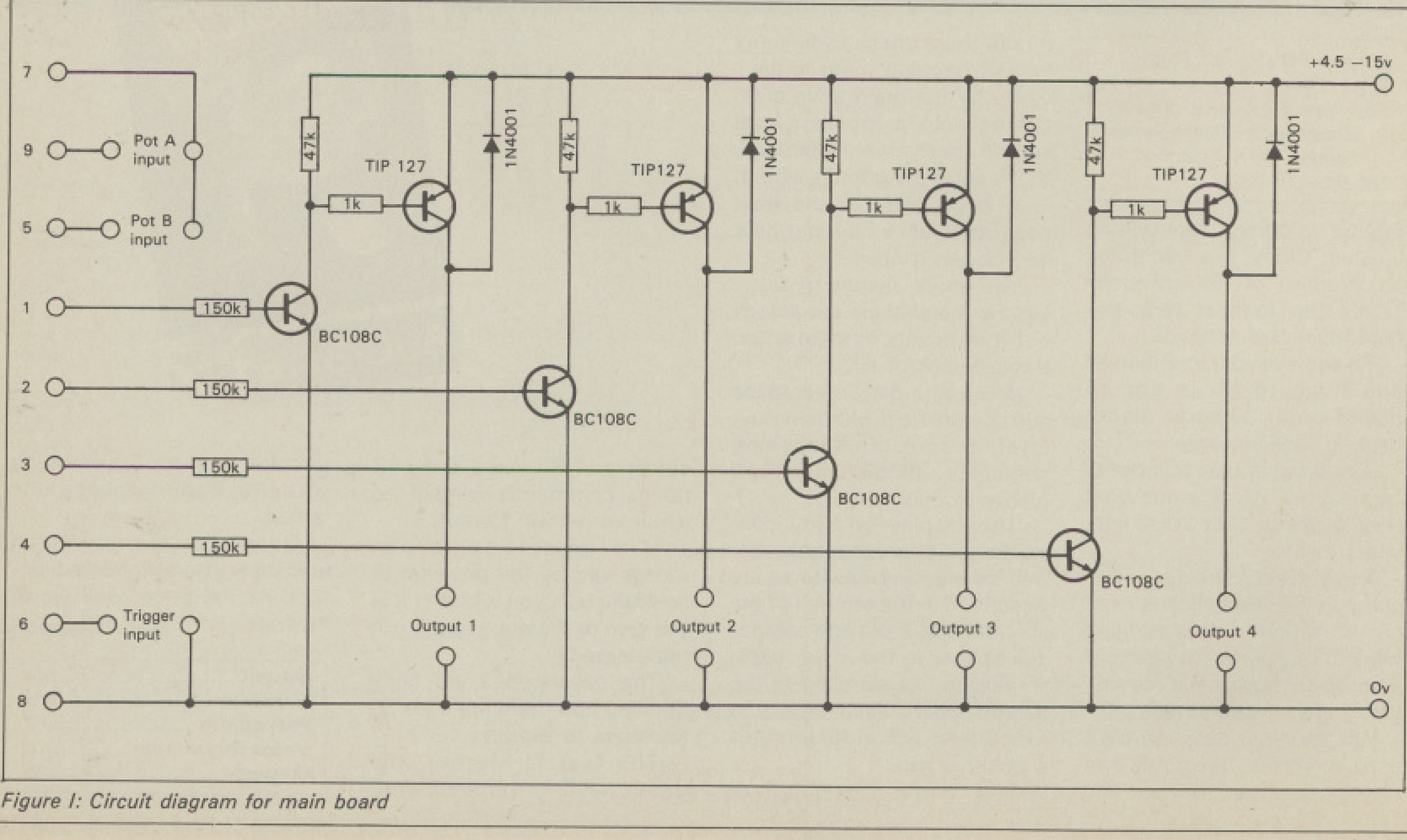
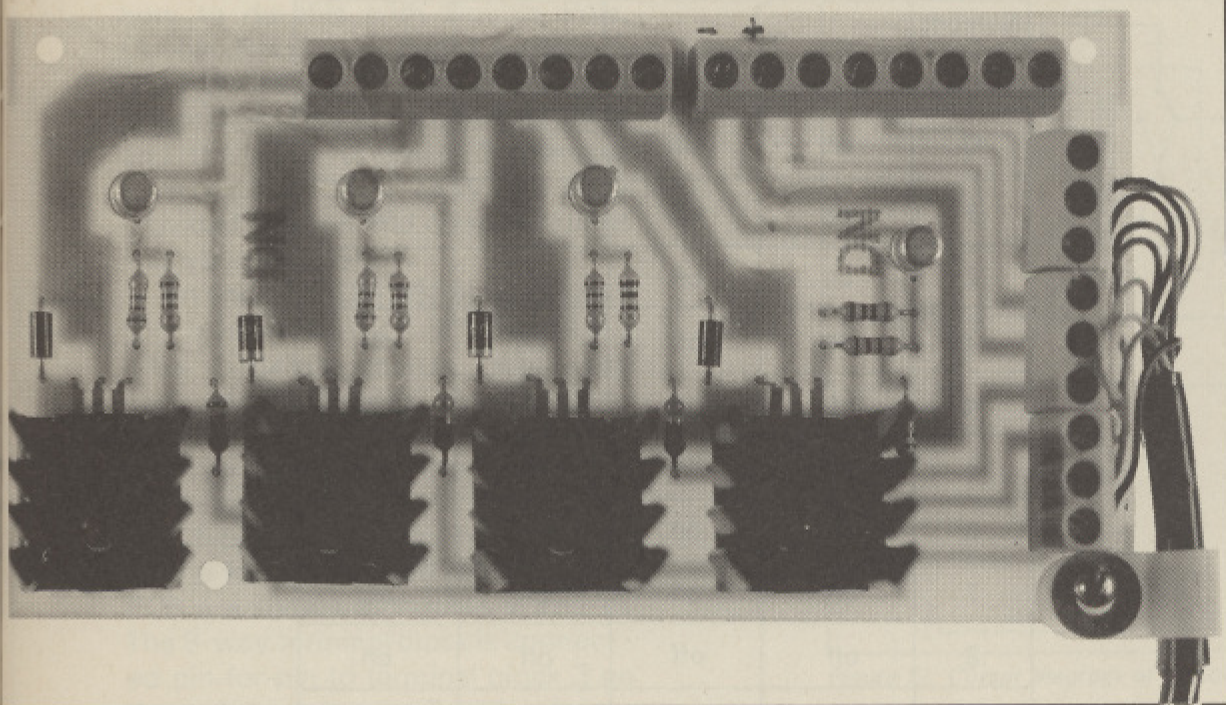
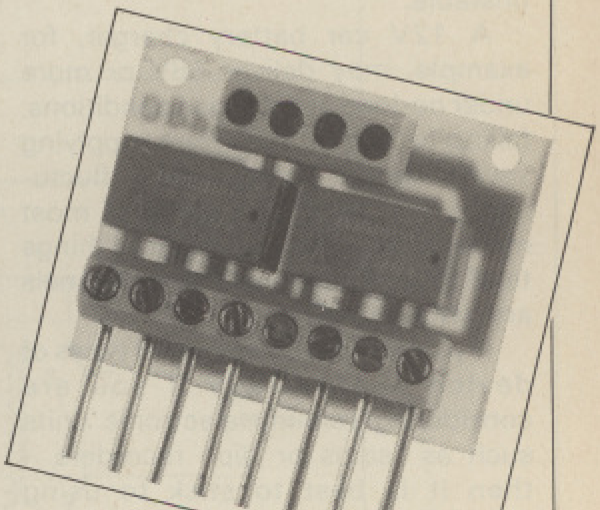


Figure I: Circuit diagram for main board





them slightly to fit the PCB holes. Smear a small amount of silicon grease on the back of each transistor then bolt the four transistor and heat-sink assemblies into place *before* soldering the leads.

Make sure that the heat-sink vanes cannot touch each other or the gadget will not work properly.

Cut the joystick cable to length, discarding the socket end, then wire each of the nine leads to its appropriate point on terminal block 1, as indicated in Figure III. Use a P clip to secure the joystick cable and take any strain.

Motors require far more current than a joystick port can provide, so the next thing you need is some kind of low-voltage DC power supply. This design allows a very wide latitude – anything from 4.5V to 24V is acceptable.

At high output currents the voltage delivered to your load may be almost 1V less than the full supply voltage.

A properly stabilised mains power supply unit is best, but these are expensive and not really necessary for things like motors, solenoids, relays, lamps and other non-electronic devices. Battery eliminators intended for transistor radios or computers give good results, but the cheap ones cannot usually supply currents above 1 amp.

DC power packs designed for model railways, slot cars and construction sets will work quite well and even a car battery charger should give acceptable results, though the output

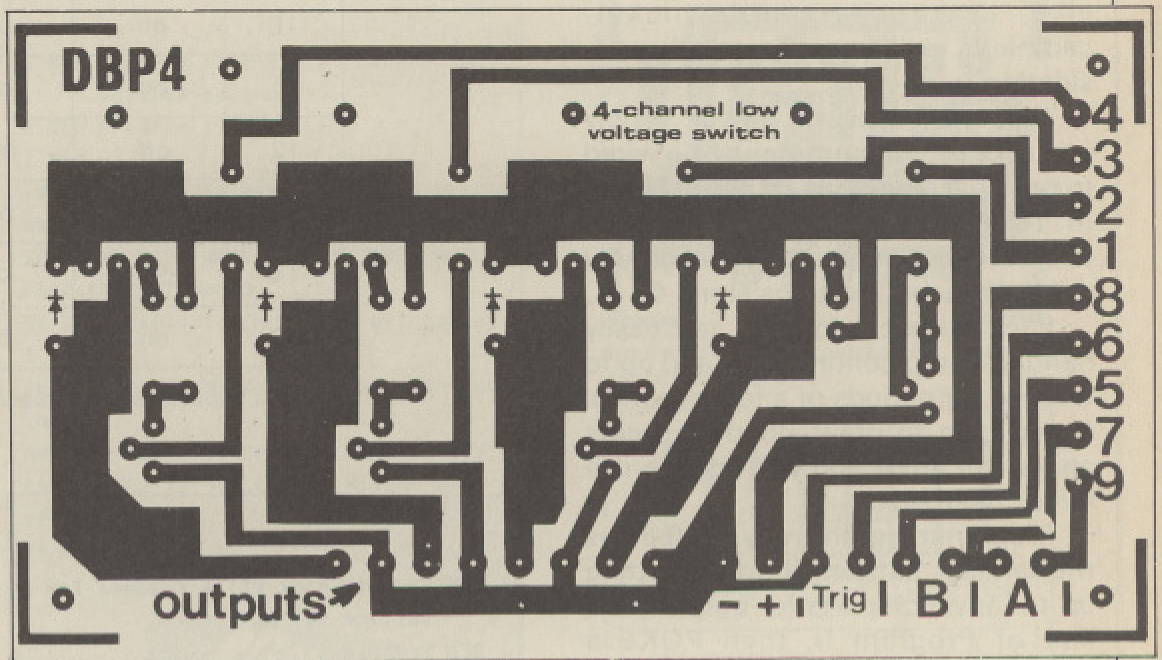


Figure II: PCB foil pattern (exact size)

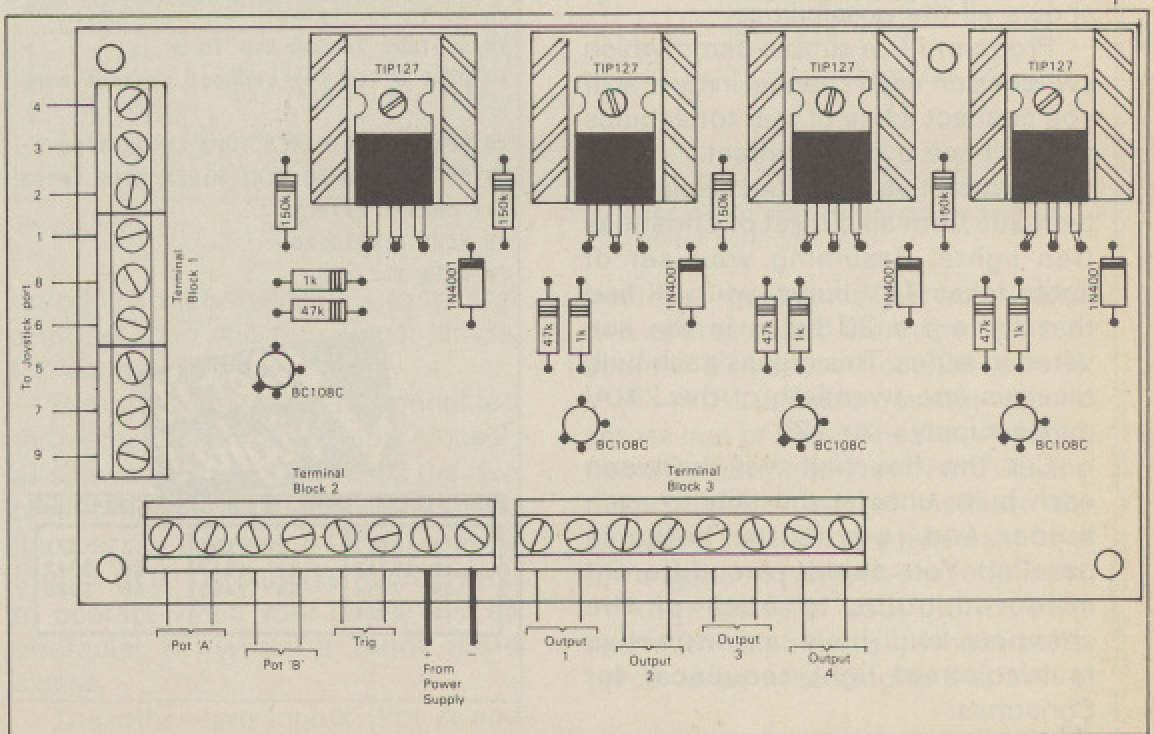


Figure III: Component layout on reverse side of PCB

from all these devices tends to be unstable.

A 12V car battery charger, for example, may deliver 18V or more under no-load or light load conditions, falling to 12V or less when supplying several amps. These voltage fluctuations will affect the speed of most model motors, so you may find things tend to slow down as more channels are switched in.

If you plan to run any other types of device – especially if you are considering running electronic units such as radios or tape recorders – then it is best to stick to using properly regulated power supplies.

Lead-acid accumulators give a good clean, stable output and can supply extremely high currents but they need careful handling. Dry batteries are safest, though expensive, and rechargeable nickel-cadmium cells may be worth considering.

Whatever type of power supply you choose, its output must be wired to terminal block 2 as shown in Figure III. Take great care not to reverse the positive and negative leads or you could damage the transistors.

Each output transistor can easily handle 1 amp continuously and up to 5 amps for periods of a few seconds. If you plan to draw steady currents above 1.5 amps you will need to use larger heat sinks.

Programming the device follows the familiar pattern. Start by setting up the joystick ports for output (first line of Program I), then POKE a number from 0 to 15 into address 54016 to switch on your chosen combination of channels. Table I shows all the possibilities.

Program I is a simple demo which switches on each channel in turn, so if you connect a line of four torch bulbs you will see a chaser effect.

An attractive animated display can be made from an old set of Christmas tree lights. Assuming your set of lights takes 12V bulbs, you will find that there are 20 bulbs in the set, wired in series. This means each bulb receives one twentieth of the 240V mains supply – or 12V.

Cut the flex half-way between each bulb, untwist the tails to each holder and re-wire the bulbs in parallel. You could wire different coloured bulbs to each of the channels and have an attractive multicoloured light sequencer for Christmas.

There is no reason, of course, why you shouldn't extend the wires with some two-core flex and run your Christmas tree lights from your Atari this year! Just remember to keep the bulbs in parallel with each other.

If you're using motors you can introduce an element of speed control by switching the power on and off in rapid pulses. Program II shows the conventional way of doing this, using a variable mark/space ratio.

A short burst of power (the mark) is applied, followed by a short off period (the space). By choosing appropriate values for *MARK* and *SPACE* you can usually reduce a motor's speed by as much as eight times before its movement becomes too jerky.

Try, for example, setting *MARK* = 1 and *SPACE* = 8. Program II operates with channel 1, but you could apply the same principle to any of the channels.

Some applications – such as buggies and robot arms – need a controller which can change a motor's direction of movement. Most model motors can be reversed simply by changing the polarity of their supply leads, and Figure IV shows

Number in 54016	Channel 1	Channel 2	Channel 3	Channel 4
0	off	off	off	off
1	on	off	off	off
2	off	on	off	off
3	on	on	off	off
4	off	off	on	off
5	on	off	on	off
6	off	on	on	off
7	on	on	on	off
8	off	off	off	on
9	on	off	off	on
10	off	on	off	on
11	on	on	off	on
12	off	off	on	on
13	on	off	on	on
14	off	on	on	on
15	on	on	on	on

Table I: Output switching from Port 1

```
1 REM Gadgets part VI: 4-channel low
     voltage switch
2 REM Program 1
3 REM
10 POKE 54018,56:POKE 54016,255:POKE 5
4018,60:POKE 54016,0:REM set up joysti
ck ports for output
20 RESTORE 70:FOR X=0 TO 3
30 READ D:REM Get channel control numb
er
40 POKE 54016,D:REM Turn channel on
50 FOR W=1 TO 60:NEXT W:REM sets speed
 of chaser effect
60 NEXT X:GOTO 20
70 DATA 1,2,4,8
```

Get it right!

LINE	CHSUM	LINE	CHSUM	LINE	CHSUM
1	14113	2	3101	3	871
10	19718	20	4517	30	9942
40	7554	50	12459	60	3086
70	2014				

Program I

how to do this with Double Pole, Double Throw – or DPDT – relays.

Each relay is run from two channels – one for the on/off function and the other to select forward or reverse. Any DPDT relay will work provided the coil and contact ratings suit your application.

An add-on PCB (DBP5) is available for use with two of Maplin's ultra-miniature relays, which can each handle 2 amps at up to 24V. Choose the coil voltage which best suits your power supply – 6V types will operate on 4.5V to 7.5V, while 12V types work on 9V to 15V.

The foil pattern and layout for this PCB are shown in Figures V and VI. The 8-way terminal block is connected pin-for-pin to terminal block 3 on the main board, using flexible wires or rigid pins cut from 2.5 sq mm mains cable. Table II gives the numbers to POKE into 54016 for the various output operations in this mode.

You might like to consider building a Lego model tank with a separate motor for each track, or a model car with some kind of servo to operate the steering. You could fit only one reversing relay and still have two

Number in 54016	Left Motor	Right Motor
0	off	off
1	off	off
2	forward	off
3	reverse	off
4	off	off
5	off	off
6	forward	off
7	reverse	off
8	off	forward
9	off	forward
10	forward	forward
11	reverse	forward
12	off	reverse
13	off	reverse
14	forward	reverse
15	reverse	reverse

Table II: Reverse switching from Port 1

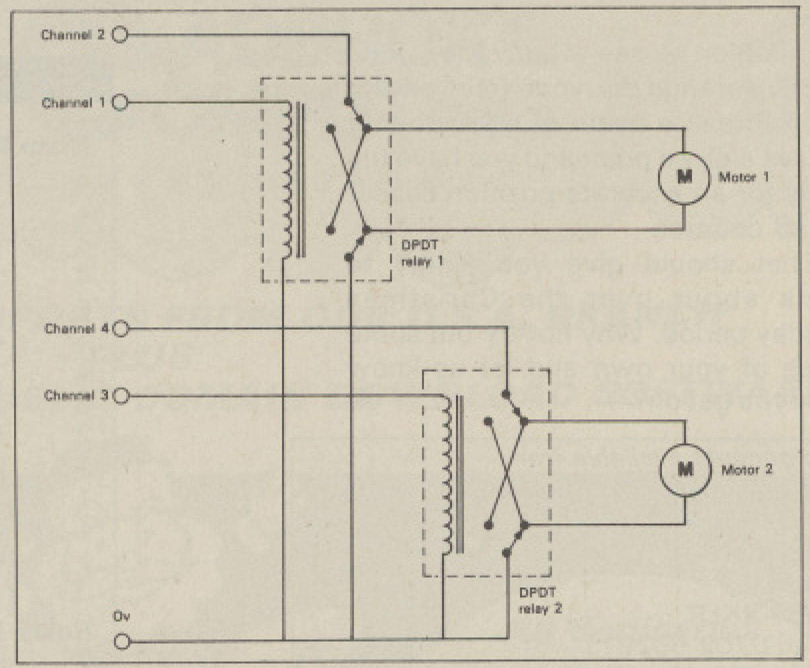


Figure IV: Circuit diagram of motor controller board

```
1 REM Gadgets part VI: 4-channel low
      voltage switch
2 REM Program 2
3 REM
10 POKE 54018,56:POKE 54016,255:POKE 5
4018,60:POKE 54016,0
20 PRINT "SET MARK,SPACE":INPUT MARK,S
PACE:REM Set speed
30 POKE 54016,1:REM Switch on channel
1
40 FOR W=1 TO MARK:NEXT W:REM "On" per
iod
50 POKE 54016,0:REM All channels off
60 FOR W=1 TO SPACE:NEXT W:REM "Off" p
eriod
70 GOTO 30
```

Get it right!

LINE	CHSUM	LINE	CHSUM	LINE	CHSUM
1	14113	2	3105	3	871
10	9297	20	11320	30	8256
40	8171	50	7830	60	8229
70	1420				

Program II

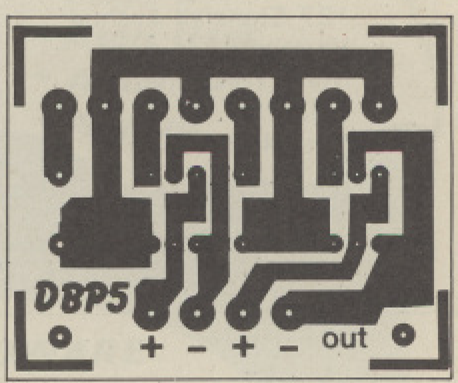


Figure V: PCB foil pattern for motor controller board

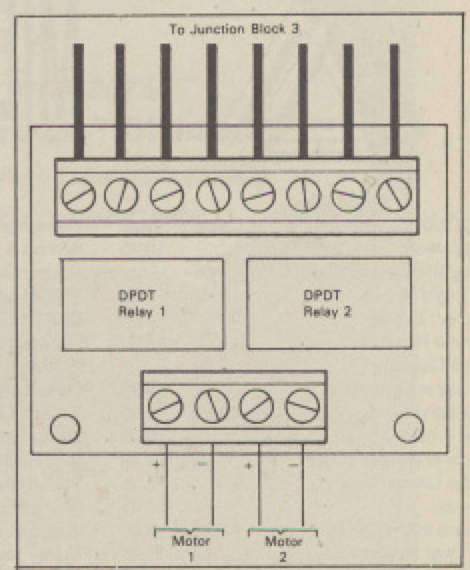


Figure VI: Component layout on reverse of motor controller PCB

on/off channels available – to control a model train and two signal lamps, for example.

External sensors can be connected to the main board at terminal block 2, as shown in Figure III. Joining the two pins marked Trig will cause the number in address 644 to change from 1 to 0. Try wiring a microswitch to operate when your buggy hits an obstacle, or when a robot hand closes.

The other two inputs (Pot A and Pot B) each measure the amount of electrical resistance between their two contacts, and store the result at address 624 (pot A) or 625 (pot B).

A 470k variable resistor placed across one of these lines will return a number from 1 to just over 200 and this could be used to measure the degree of rotation in a servo shaft, or the angular movement ~~of~~ a robot arm.

Alternatively you could fit a cadmium sulphide cell, whose resistance varies according to the level of

illumination – see *Atari User*, June 1986. Arrange for your train or slot car to break a beam of light when it passes a given point and you have the basis for an accurate position sensor or lap counter.

That should give you plenty to think about over the Christmas holiday period. Why not try out some ideas of your own and let us know how you get on? ■

All components available from:
Maplin Electronic Supplies
P.O. Box 3
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Circuit boards are available from:
R.H. Design
137 Stonefall Avenue
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North Yorkshire
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Tel: 0423 508359

Main printed circuit board (DBP4)	£3.10
Relay Board (DBP5)	£0.48*

**plus 20p postage if not ordered with main board.*

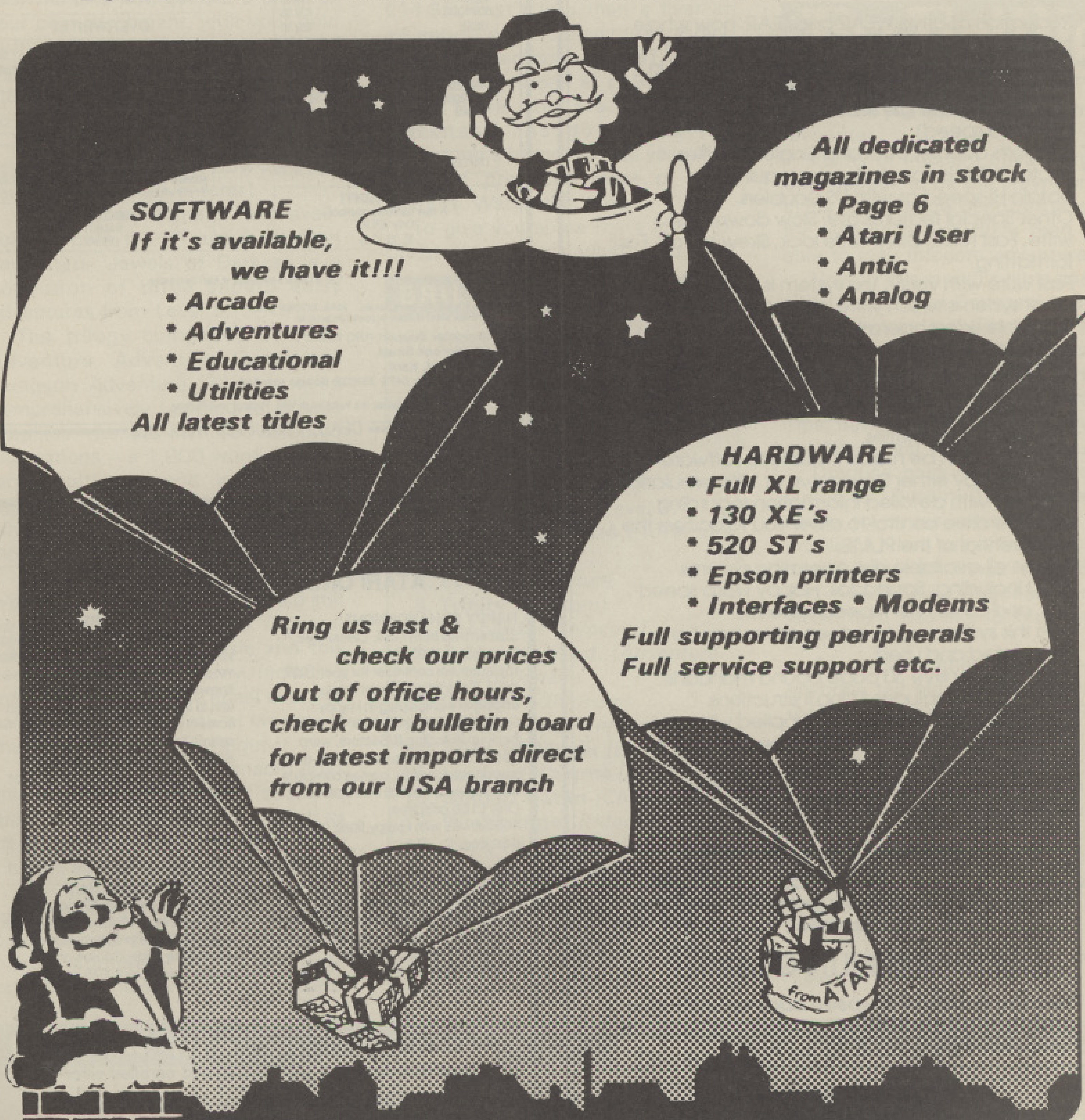
PARTS REQUIRED

	Main Board	Maplin Codes
4	BC108C transistors	QB32K
4	TIP127 transistors	WQ74R
4	Vaned heatsinks	FL58N
4	1N4001 diodes	QL73Q
4	150k resistors (brown/green/yellow)	M150K
4	47k resistors (brown/violet/orange)	M47k
4	1k resistors (brown/black/red)	M1K
3	3-way pc terminal blocks	RK72P
2	8-way pc terminal blocks	RK38R
1	Cable P clip 3/16"	LR44X
1	Tube silicon grease	HQ00A
1	Pack 6BA x ½" bolts	BF06G
1	Pack 6BA nuts	BF18U
		Approximate cost £9.80
	Relay Board	
1	8-way pc terminal block	RK38R
1	4-way pc terminal block	RK73Q
2	Ultra-miniature DPDT relays	BK48C (6 volt)
		YX95D (12 volt)
		Approximate cost £3.85

A joystick extension lead is available from Tandy stores (code 276-1978) or from large computer shops, priced around £3.30.

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Bargain of the year

By Brillig

WHEN you wake up early on Christmas morning and reach out to dispel the shadows by turning on your trusty brass lantern, what adventure will you hope to find stuffed in your battered leather knapsack at the foot of your pile of straw?

Perhaps you've already made up your mind. If not, get out a piece of your best parchment, with your gold quill write the words Jewels of Darkness on it, address it to Santa c/o the North Pole and shove it straight up the chimney.

Who shouted that there's no such person as Santa Claus? How dare you call yourself an adventurer!

Published by Rainbird, and available for both the ST and 8 bit Atari computers, Jewels of Darkess is a collection of three superb early adventures from Level 9.

The trilogy comprises Colossal Adventure, Adventure Quest and Dungeon Adventure. All have been comprehensively updated to include graphics – no less than 600 coloured illustrations – a 1,000 word vocabulary, multi-command input, multitasking (type ahead regardless of what's happening on the screen), and incredibly fast response times.

Even without all that technological wizardry these adventures would still be among the best around. Colossal Cave is an all-time classic and this version is rated by many, including my humble self, as the finest ever. No self-respecting adventurer worthy of the name should be without it.

And just what king's ransom does this regal collection cost, I hear you ask in trepidation? My raven fell off its perch and almost died laughing when I told it, so brace yourself for a shock.

For the 8 bit Ataris you get this imperial trilogy on three separate cassettes, or one disc, handsomely boxed, complete with a 64 page novella, for the incredibly low price of £14.95. That's less than a fiver an adventure, not counting the smashing packaging and book. The ST version costs slightly more, at £19.95.

So there you are. Jewels of Darkness has got to be the adventurer's bargain of the year. And Rainbird promises more of such delights. Watch this space.

To give you some more ideas for Christmas presents, whether for your friends or yourself, I've listed my 20 favourites.

BRILLIG'S TOP SCORE

1. **Hitch-Hiker's Guide to the Galaxy** *(Infocom)*
2. **Jewels Of Darkness** *(Rainbird)*
3. **Zork I** *(Infocom)*
4. **Planetfall** *(Infocom)*
5. **The Pawn** *(Rainbird)*
6. **Lords of Time** *(Level 9)*
7. **Pirate Adventure** *(Adventure International)*
8. **Zork II** *(Infocom)*
9. **Trinity** *(Infocom)*
10. **Enchanter** *(Infocom)*
11. **Adventureland** *(Adventure International)*
12. **Sorcerer** *(Infocom)*
13. **Spellbreaker** *(Infocom)*
14. **Price of Magik** *(Level 9)*
15. **Lords of Kharma** *(Avalon Hill)*
16. **Golden Baton** *(Channel 8)*
17. **Wishbringer** *(Infocom)*
18. **Zork III** *(Infocom)*
19. **Mordon's Quest** *(Melbourne House)*
20. **Sorcerer of Claymorgue Castle** *(Adventure International)*

Plenty of Infocom titles there, but they happen to be the crown princes in my book. I know of no better reason for owning a disc drive than being able to play Infocom adventures.

Now to this month's hints and tips. Nigel Morse from Doncaster wants to know how to deal with the snowman and the dragon in Rainbird's The Pawn. Nigel's difficulties with the snowman are dealt with in Hints 'N' Tips, but can anyone tell me how to get Nigel past the dragon?

Dragons have also stumped Eric Nolan of Dublin. These creatures seem to cause adventurers more problems than anything else. Eric needs help with those in Enchanter and Feasibility Experiment. In the latter, he'd also like to know how to light his lamp.

Eric has another problem – can anybody tell him where he can find the drum for the soldier ants in Return To Eden?

Next issue I'll be back with more hints and tips to aid you in your struggles, together with the start of a reader's Lifeline corner. If you'd like to be listed in Lifeline write in with your name, address and which adventures you can help others with.

Until then, I wish you a joyous Christmas and an adventurous New Year. ■

HINTS 'N' TIPS

ENCHANTER – *Infocom*
To deal with the dragon.
LLEP SRAD NOGE HTES U

THE PAWN – *Rainbird*
Snowman a barrier?
ETIH WEKA MOTE ULBD NANE ERGD ERXI M
Then simply:
TIHT IWNA MWON STLE M

FEASIBILITY EXPERIMENT – *Digital Fantasia*
To overcome this dragon's fiery breath.
FLES DLEI HSDN ANOP AEWE SU
To fix the lamp.
KCIW ADNA LIOD EENU OY

ZORK I
Is the thief bringing you to grief in combat?
NOPA EWTS EBEH TSIE FINK YTSA NEHT ERAU OYRE GNOR TSEH TEVA HUOY STNI OPER OMEH T ELBA ULAV GNIH TEMO SMIH GNIV IGYB MIHT CART SID

Classics for Christmas

ANDRÉ WILLEY looks at the very best games, old and new, for Atari users

IT really doesn't seem twelve months since you were sitting round the dinner table tucking into that enormous Christmas turkey does it? But, 'tis the season to be jolly, and for many of our readers that means getting out all the old favourites – games which haven't seen the light of day since last Christmas. If you remember, the twins thrashed granny at Missile Command and Uncle Tom spent most of the afternoon trying to get his frog across the road . . .

For seasoned owners the Atari will naturally be a star performer at Christmas but spare a thought for the newcomers who took advantage of the marvellous Dixons and Currys bargain packs during 1986. They have probably never seen Frogger, much less the other classics.

The problem is that alongside these masterpieces there was, frankly, a lot of rather highly priced rubbish. So, if you're among that vast majority of Atari owners who don't remember the excitement of buying an original 16k Atari 800 for the bargain price of £645, read on and get a few ideas for this Christmas.

There can really only be one place to start when talking about all-time classic Atari games – and that is with **Star Raiders.** Released on an 8k cartridge at £34.95 (now available at under a tenner), this game was a milestone in the computer games industry. Indeed, I know a good few



people who actually lashed out their £645 just to play this game and it still holds up well today.

Star Raiders is a space combat simulator with a through-the-window flight display. The aim is to defend your Starbases from attack by the evil Zylon empire.

To do this you hyperwarp your space ship around the galaxy to areas which your long range tracking system shows have a high Zylon fleet concentration. When you drop out of hyperwarp your short range trackers kick back into life and with the red alert klaxon ringing in your ears you engage the shields and the attack computer and commence battle.

As your on-board systems sustain damage and you run desperately low on fuel, you must choose your moment to warp out and dock with a friendly starbase for repairs.

Star Raiders is extremely addictive and a must for all serious games enthusiasts.

Staying with the space theme for a while, there can be few who have not seen the arcade machine **Defender** and the Atari cartridge is one of the closest representations available. You have all the excitement and speed of the original, blasting aliens like there is no tomorrow as you rescue people from the clutches of the evil galactic baddies.

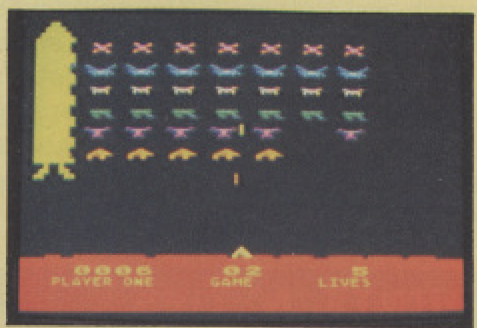
If you liked Defender then you'll love **Dropzone.** This was released a little more recently but very quickly gained the classic label. The theme is the same as Defender but this time you play a space man with a jet pack and a laser gun.

No games overview would be complete without a mention of Space Invaders, and there have been a whole host of variations on this arcade standard. The closest to the original machine is probably **De-Luxe Invaders** from Roklan, but Atari's own **Space Invaders** cartridge is pretty good too.

The **Galaxians** cartridge has its merits in terms of fast moving aliens, but the cream of the lot must be **Bandits** from Sirius software. I last saw this priced at £21.99, but it was worth every penny.

Each wave of aliens is different: Firstly a bunch of swooping and diving craft which are quite easy to knock off, then craft that fly off into the distance every so often.

These are followed by ships made up of coloured spheres which will separate and bounce all over the place if you shoot them down. The next wave features centipede-like



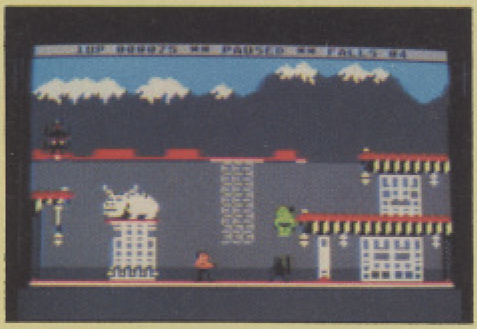
aliens which snake their way towards you at an alarming pace.

As you progress through the levels these different types of ship gang up to try to obliterate you. Accompanied by some of the most original – not to say downright rude – sound effects I've heard for years, this game is one of my all-time favourites.

One of the strangest computer games I've come across – and I highly recommended it – is **Joust.** You play a space-age knight in shining armour, astride not a horse but a giant flapping bird.

The controls are simple – left, right and press the button to flap (gravity brings you down again, often with a bump). Combat is straightforward but, especially as a two player game in which both riders play on the same screen, it is hard to beat for sheer enjoyment.

Moving on from the space attack games, there are a number of family



games. The most obvious of these is **Pac-Man** – which I don't really think needs any further explanation other than to say that it is one of the best versions available on any micro, even today.

Frogger is another arcade classic which has made a successful move to the Atari home computer – complete with cars, logs, turtles and even Mrs Frog. This one still has great appeal.

Another Frogger-like game is **Preppie** – which features a little fellow who must cross the road and river in order to collect golf-balls which have gone out of bounds. Again, this has lasting interest and some pleasant music.

If you want a bit more of a challenge, look no further than **Miner 2049er.** This is probably top of my own personal list of favourite arcade games, simply because there is so much to it.

You play Bounty Bob, a gold prospector who is trying to find his way through the radioactive mines. Along the way there are radioactive creatures who kill on contact, but which you can destroy after picking up certain objects – rather like Pac-Man's power-pills.

The real appeal of Miner is that to complete each level you must leave your footprints on every bit of floor you can see – and that often involves a lot of leaping about, not to mention using the teleporter lifts and falling down slippery slides at just the wrong moment.

There are 10 completely different screens and as many difficulty levels of each screen – making screen 10/level 10 an almost impossible task. This game is a must for all game-a-holics, and no collection is complete without it – or its sequel Bounty Bob Strikes Back. Still on the levels and ladders theme, you should also look out for **Donkey Kong, Lode Runner** and **Popeye,** all of which still hold up very well today and provide hours of fun.

If you wish to add a combat element to this idea you could try **Bruce Lee,** in which you take the part of our hero in trying to defeat the bad guys and exploring a temple at the same time.

The simulation enthusiasts have not been forgotten in the Atari games field, with the excellent **Pole Position** car racing game still selling well, even if it has been a little out-classed recently by **ElectraGlide.**

Flight Simulator II and **Mercenary** both boast excellent 3D in-flight graphics, with Mercenary having the added bonus of the space theme and lots of exploring and bargaining to do.

Sports fans can try their hands at **Summer Games,** which is a real joystick wrencher and can be very compulsive when played in a foursome. **Decathalon** is good too, but I think that Summer Games just takes the edge.

Martial arts fans who were not satisfied with Bruce Lee should take a look at **International Karate.** Although only released recently this will quickly become a classic and should feature in any serious games player's collection. It allows you to take your karate more seriously, with various kicks, punches and moves available to you, plus full scoring and match play rules.

That collection should see you through December 25th. However, when Boxing Day comes around and the relatives have all gone home, how about sitting down with something a bit more brain taxing – and what better choice than an Infocom adventure?

Adventures are not everyone's cup of tea, but if you want one that will appeal to almost anybody, give the **Hitch Hiker's Guide to the Galaxy** a try. You may be stuck on it till next Christmas, but whatever else you do you'll keep on coming back to it for one more try.

The characters are well rounded, the puzzles intriguing and infuriating and the situations really zany. It took me absolutely ages to get through the screening door on the Heart of Gold spaceship, but that feeling of euphoria as it finally slid open surpasses any amount of alien-blasting.

In this brief survey I haven't really been able to scratch the surface of the enormous number of games available for the 8 bit Atari. For example it would be well worth your taking a look at such all-time hits as Caverns of Mars, Sea Dragon, Encounter and Missile Command.

Hopefully I have been able to give some of the newer owners a few ideas for Christmas and reminded the old faithfuls to dust off the cartidge box, get out the spare joysticks and have a very Merrv *Atari User* Christmas ■

The titles mentioned are available from the following suppliers:

Missile Command, Caverns of Mars, Star Raiders, Defender, Space Invaders, Galaxians, Joust and Donkey Kong – Atari.

Frogger – Sierra On-Line*

De-Luxe Invaders – Roklan*

Sea Dragon, Dropzone, Preppie, Bounty Bob Strikes Back – Americana.

Bruce Lee, Pole Position, Lode Runner, Summer Games – U.S. Gold.

Bandits – Sirius Software*

Miner 2049er – Sirius Software*

Popeye – Parker Brothers*

ElectraGlide – English Software.

Flight Simulator II – Sub Logic Corp.

Mercenary and Encounter – Novagen.

Decathlon – Activision.

International Karate – System 3/Activision.

Hitch Hiker's Guide to the Galaxy – Infocom.

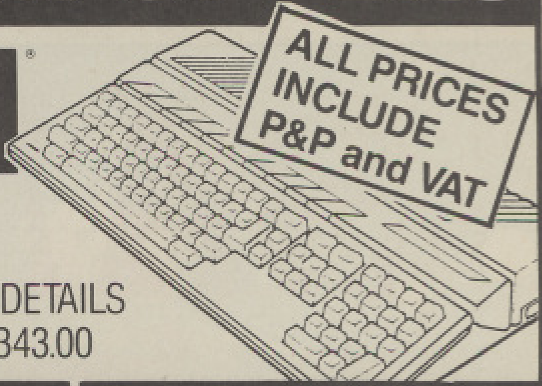
*Indicates no longer easily available, but with a little hunting about, readers could probably find some old stock.

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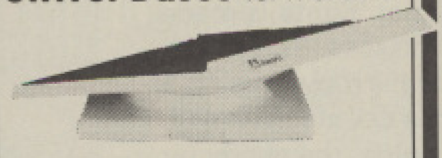
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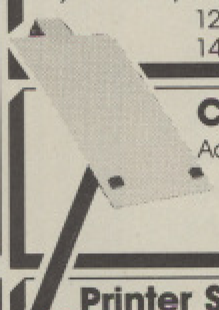
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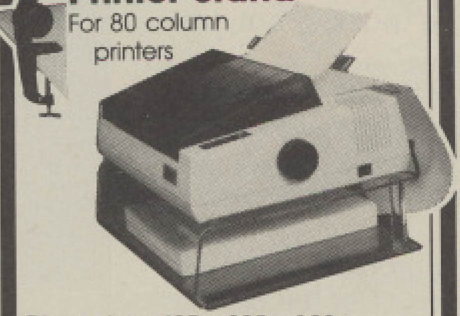
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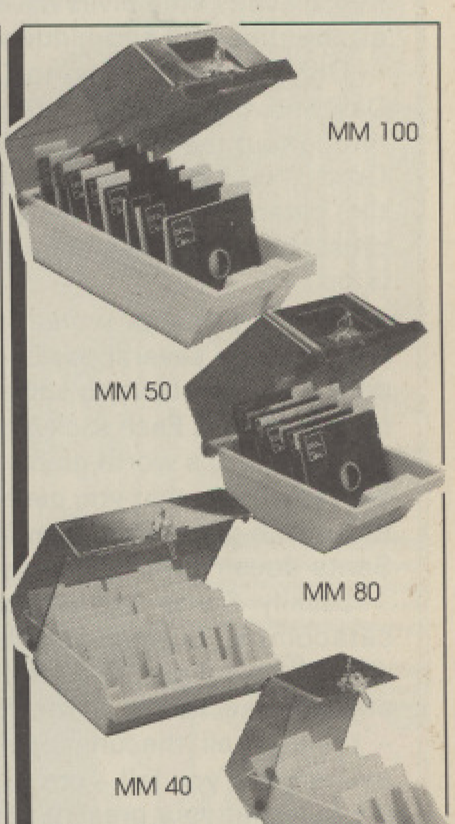
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SANTA'S GROT

Have some festive fun with MIKE ROWE's latest game



IT'S Christmas Eve and all over the country stockings are being hung and chimneys swept in preparation for the following morning. All is happy and cheerful and the world is at peace.

But wait . . . at the North Pole all is not so well – poor Santa is in a panic. He's polished Rudolph's nose, checked the oil level and tyre pressure, got his AA route map ready and is about to depart when he finds the boot of his sleigh is empty. Those mischievous little elves have pinched all the presents and hidden them!

Only six hours to go to Christmas Day and the presents are scattered throughout the catacombs of Santa's Grotto. Your is to guide Santa around the catacombs, collecting as many presents as possible before the time is up.

To make things worse, the elves have hidden several sacks in rooms where you will have to solve a puzzle to get at them. Each sack contains 10 presents so it's worth going for them, but remember that you cannot waste too much time in these rooms as Santa doesn't want to linger.

Luckily Santa has a map of the catacombs, but unfortunately it's difficult to fold and he can only see one small section at a time. So go to it – think of all the unhappy children tomorrow if you fail – not to mention the fact that your present might be in there somewhere!

Santa's Grotto is a one player game where the object is to rush around the 100 screen maze collecting as many presents as possible. Each time you play a completely new maze will be created. You control Santa with a joystick in port one and to collect a present all you have to do is touch it. The time limit is displayed at the bottom of the screen.

Not all presents are necessarily obtainable but you must get as many as you can before midnight. And there are 10 magic locations which will transport you to one of the elves' secret lairs. Here you will find a sack containing 10 presents, but to get it you must solve a little puzzle.

At the end of the game the number of presents you have collected will be displayed and a rating of your performance will be given.

The program is commented with rems to give some idea of what's going on, although to save on typing these can be omitted without affecting the running of the game.

The main part of the game runs on a custom Display List screen which is largely made up of Graphics 2 lines, with the maze being drawn using a custom character set. Santa is made up of two player missiles, thus giving his two colours. He is moved using a small machine code call stored in *M$*.

Screen initialisation, the character set and the player missile graphics are done in lines 2000 to 25000 and the data for this starts at line 25000. The screen drawing routines begin at line 2000.

The main routine for the program is on lines 100 to 190, with subroutines for moving Santa at lines 50 to 95. These are put at the beginning of the program to give a little extra speed where it is most needed. Lines 200 to 990 control the puzzle solving sections.

Once you have typed it in don't forget to Save a copy before you run it. There is some machine code used which could crash the computer if mistyped.

If you have any problems typing it in, don't forget to use Get It Right! to help you – or why not download a copy from MicroLink? ■


TTO

```
10 REM SANTA'S GROTTO
12 REM MIKE ROWE 1986
14 REM FOR ATARI USER
16 REM CHRISTMAS 1986
20 GOTO 20000
50 IF Z=99 OR Z=100 OR Z=101 OR Z=102 OR Z=104 OR Z=107 OR Z=111 THEN RETURN :REM DOWN
55 FOR I=1 TO 16 STEP 2:YP=YP+2:A=USR(ADR(M$),P14,YP+PMB+1024,20):A=USR(ADR(M$),P24,YP+PMB+1280,20):NEXT I:RETURN
60 IF Z=98 OR Z=100 OR Z=101 OR Z=103 OR Z=105 OR Z=107 OR Z=110 THEN RETURN :REM UP
65 FOR I=1 TO 16 STEP 2:YP=YP-2:A=USR(ADR(M$),P13,YP+PMB+1024,20):A=USR(ADR(M$),P23,YP+PMB+1280,20):NEXT I:RETURN
70 IF Z=98 OR Z=99 OR Z=100 OR Z=104 OR Z=105 OR Z=106 OR Z=109 THEN RETURN :REM RIGHT
72 A=USR(ADR(M$),P11,YP+PMB+1024,20):A=USR(ADR(M$),P21,YP+PMB+1280,20)
75 FOR I=1 TO 8:XP=XP+1:POKE 53248,XP:POKE 53249,XP:A=1*1:NEXT I:RETURN
80 IF Z=98 OR Z=99 OR Z=101 OR Z=102 OR Z=103 OR Z=106 OR Z=108 THEN RETURN :REM LEFT
82 A=USR(ADR(M$),P12,YP+PMB+1024,20):A=USR(ADR(M$),P22,YP+PMB+1280,20)
85 FOR I=1 TO 8:XP=XP-1:POKE 53248,XP:POKE 53249,XP:A=1*1:NEXT I:RETURN
90 FOR I=1 TO 40:NEXT I:RETURN :REM NO MOVEMENT
99 REM MAIN LOOP
100 X=(XP-48)/8:Y=(YP-40)/16:REM CONVERT PLAYER MISSILE TO SCREEN COORDS
110 Z=PEEK(SC+Y*20+X):REM WHAT AM I STOOD ON
120 TIME=TIME-1:POSITION 29,0:? "TIME ";TIME;" ":REM TIMER ROUTINES
125 IF TIME<0 THEN GOTO 3000
130 GOSUB ROUTINE:REM ROOM SUBROUTINES
140 S=STICK(0)
150 ON S GOSUB 90,90,90,90,70,70,70,90,80,80,80,90,50,60,90
190 GOTO 100
199 REM NORMAL MAZE SUBROUTINE
200 IF X<0 THEN GOTO 2000:REM OFF SCREEN
210 IF X>19 THEN GOTO 2100
220 IF Y<0 THEN GOTO 2200
230 IF Y>9 THEN GOTO 2300
250 IF Z=240 THEN GOTO 400:REM STOOD ON PRESENT SO PICK IT UP
260 IF Z=241 THEN GOTO 300:REM SACK
290 RETURN
299 REM GET SACK
300 FOR I=15 TO 0 STEP -1
310 SOUND 0,I,0,I
320 NEXT I
330 FOR SACK=0 TO 9
340 IF SACKS(SACK)=ROOM THEN POP :GOTO 360
350 NEXT SACK
355 SACKS(SACK)=255:PRES(ROOM)=255
360 GOTO 1000+SACK*100
399 REM PICK UP PRESENT
400 FOR I=15 TO 0 STEP -1
410 SOUND 0,I,2,I
420 NEXT I
430 GOSUB 2500+RT(ROOM)*10
435 GOSUB 2500+RB(ROOM)*10
440 PRES(ROOM)=255
450 PRES=PRES+1
460 POSITION 0,0:? PRES;" PRESENTS"
490 GOTO 100
499 REM PRESS BUTTONS ROOM
500 IF Z<>50 THEN RETURN
510 IF TRY(TRY)<>Y/2 THEN SOUND 0,200,2,10:TEXT$="WRONG - START AGAIN!":GOSUB 900:TRY=1:GOTO 570
540 FOR I=15 TO 0 STEP -0.5:SOUND 0,50,10,I:NEXT I
550 IF TRY=3 THEN TEXT$="WELL DONE - A SACK OF 10 PRESENTS":GOSUB 900:PRES=PRES+10:GOTO 590
560 TRY=TRY+1
570 POKE 53248,192:POKE 53249,192:XP=192
575 SOUND 0,0,0,0
580 RETURN
590 XP=OLDXP:YP=OLDYP:POKE 53248,XP:POKE 53249,XP:ROUTINE=200
595 POSITION 0,0:? PRES;" PRESENTS":GOTO 2312
599 REM TRAFFIC LIGHTS ROOM
600 IF Z=51 THEN TRY=3:SETCOLOR 0,8,10:GOTO 550
610 IF TRAF<>3 THEN 640
620 IF RND(0)<0.05 THEN TRAF=15
630 GOTO 680
640 IF TRAF<>15 THEN 660
650 IF RND(0)<0.1 THEN TRAF=3
652 IF RND(0)<0.1 THEN TRAF=11
655 GOTO 680
660 IF TRAF<>11 THEN 680
670 IF RND(0)<0.1 THEN TRAF=15
680 SETCOLOR 0,TRAF,10
685 IF S<>15 AND TRAF=3 THEN TEXT$="YOU WENT THROUGH A RED LIGHT!":GOSUB 900:SETCOLOR 0,8,10:GOTO 590
690 RETURN
699 REM TRAP DOORS ROOM
700 IF Z=52 THEN FOR I=0 TO 255:SOUND 0,I,10,10:NEXT I:TEXT$="YOU FELL DOWN A TRAPDOOR!":SOUND 0,0,0,0
710 IF Z=52 THEN GOSUB 900:SETCOLOR 0,8,10:GOTO 590
750 IF Z=113 THEN TRY=3:SETCOLOR 0,8,10:GOTO 550
790 RETURN
799 REM INVISIBLE MAZE
800 IF X>19 OR X<0 OR Y>9 OR Y<0 THEN SETCOLOR 1,14,10:TEXT$="YOU LEFT THE MAZE":GOTO 590
820 IF Z=49 THEN TRY=3:SETCOLOR 1,14,10:FOR I=1 TO 10:SOUND 0,100,10,10:NEXT I:SOUND 0,0,0,0:GOTO 550
840 RETURN
899 REM TEXT PRINT ROUTINE
900 POSITION 0,7:? TEXT$
910 FOR I=1 TO 500:NEXT I
920 POSITION 0,7:? "                                      ";
930 RETURN
999 REM SACK PUZZLE 1
1000 GOSUB 2700
1010 ROUTINE=500:POKE 53277,0
1020 POSITION 8,2:? "R":POSITION 3,3:? "R":POSITION 5,4:? "R"
1030 SETCOLOR 0,11,10
1040 OLDXP=XP:OLDYP=YP
1050 PRES(ROOM)=255:SACKS(SACK)=255
1060 TEXT$="PRESS THE BUTTONS IN THE RIGHT ORDER":GOSUB 900
1070 FOR I=1 TO 3:TRY(I)=INT(RND(0)*3+1):NEXT I:TRY=1
1080 POKE 53248,192:POKE 53249,192:XP=192
1090 POKE 53277,3:GOTO 100
1099 REM SACK PUZZLE 2
1100 GOSUB 2700
1110 ROUTINE=600:POKE 53277,0
1120 POSITION 3,3:? "S":SETCOLOR 0,11,10
1140 OLDXP=XP:OLDYP=YP:TRAF=11
1150 PRES(ROOM)=255:SACKS(SACK)=255
1160 TEXT$="TRAFFIC LIGHTS - STOP ON RED!":GOSUB 900
1180 POKE 53248,192:POKE 53249,192:XP=192
1190 POKE 53277,3:GOTO 100
1199 REM SACK PUZZLE 3
1200 GOSUB 2700
1210 ROUTINE=700:POKE 53277,0
1220 FOR I=1 TO 20:P=INT(RND(0)*200):IF PEEK(SC+P)=0 THEN POKE SC+P,52
1230 NEXT I:POSITION 2,3:? "q"
1240 OLDXP=XP:OLDYP=YP
1250 PRES(ROOM)=255:SACKS(SACK)=255
1260 TEXT$="MEMORISE & AVOID THE HIDDEN TRAP DOORS":GOSUB 900
1270 SETCOLOR 0,0,0
1280 POKE 53248,192:POKE 53249,192:XP=192
1290 POKE 53277,3:GOTO 100
1299 REM SACK PUZZLE 3
1300 POSITION 0,1
1310 ROUTINE=800:POKE 53277,0
1320 POSITION 0,1:GOSUB 2610:GOSUB 2610
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1330 POSITION 0,3:? "Q"
1340 OLDXP=XP:OLDYP=YP
1350 PRES(ROOM)=255:SACKS(SACK)=255
1360 TEXT$="INVISIBLE MAZE":GOSUB 900
1370 FOR I=10 TO 0 STEP -0.1:SETCOLOR
1,14,I:NEXT I:SETCOLOR 1,0,0
1380 POKE 53248,200:POKE 53249,200:XP=
200
1390 POKE 53277,3:GOTO 100
1400 GOTO 1000
1500 GOTO 1100
1600 GOTO 1200
1700 GOTO 1000
1800 GOTO 1100
1900 GOTO 1200
1999 REM DRAW MAZES
2000 R1=R1-1:IF R1<0 THEN R1=R1+10
2010 POKE 559,0:POKE 53248,200:POKE 53
249,200:XP=200
2015 POSITION 0,1
2020 GOTO 2400
2100 R1=R1+1:IF R1>9 THEN R1=R1-10
2110 POKE 559,0:POKE 53248,48:POKE 532
49,48:XP=48
2115 POSITION 0,1
2120 GOTO 2400
2200 R2=R2-1:IF R2<0 THEN R2=R2+10
2210 POKE 559,0:YP=184
2212 POKE PMB,0:A=USR(ADR(M$),PMB,PMB+
1,2048)
2214 A=USR(ADR(M$),1596,YP+1024+PMB,20
)
2215 POSITION 0,1
2216 A=USR(ADR(M$),1676,YP+1280+PMB,20
)
2220 GOTO 2400
2300 R2=R2+1:IF R2>9 THEN R2=R2-10
2310 POKE 559,0:YP=40
2312 POKE PMB,0:A=USR(ADR(M$),PMB,PMB+
1,2048)
2314 A=USR(ADR(M$),1596,YP+1024+PMB,20
)
2315 POSITION 0,1
2316 A=USR(ADR(M$),1676,YP+1280+PMB,20
)
2400 ROOM=R1+R2*10
2410 GOSUB 2500+RT(ROOM)*10
2420 GOSUB 2500+RB(ROOM)*10
2430 POKE 77,0:POKE 559,62
2440 IF PRES(ROOM)<250 THEN POKE SC+PR
ES(ROOM),240
2450 FOR I=0 TO 9:IF SACKS(I)=ROOM THE
N POKE SC+PRES(ROOM),241
2460 NEXT I
2490 GOTO 100
2500 ? "gdjgigijgigijgkkijei";
2501 ? "fkhjjjjjjfhjjfkijfkh";
2502 ? "nkijfhjcjbghfkdjfndg";
2503 ? "jbfhekokhjjgkkkhbfkh";
2504 ? "fhgkkkknkhfhgkkkonkd";
2505 RETURN
2510 ? "ghhgkkifigkilnkkijgi";
2511 ? "fkdjekoijfijfhgdjfhj";
2512 ? "igkokkijfijfkkmghgil";
2513 ? "jjgiekhfifhgkifhgmjj";
2514 ? "fhjfkkhifkkhbfkkhjfh";
2515 RETURN
2520 ? "gifkkkkhgkkijekkicgi";
2521 ? "jfdgkknkmgijfkkkmemj";
2522 ? "mgijgdfijjcjgigifkhl";
2523 ? "jjfmjgkhfhghjfhjekkh";
2524 ? "fhbfhfdgkkheakdfknkd";
2525 RETURN
2530 ? "gdcgkkifkieifkkkicgi";
2531 ? "fkkmgifkifkonigifkhj";
2532 ? "nkkhjjgdfnkijjjfkkil";
2533 ? "jgkijjjgijehcjfdgkmj";
2534 ? "fhbfhfhjcfkkifkkhbfh";
2535 RETURN
2540 ? "gkokkigokkkicgnnifki";
2541 ? "figkijfkkkifkhjjjbgh";
2542 ? "ijjghjgdgifkkkhjjjlk";
2543 ? "jfhjghlkhfkkkkkhjjfi";
2544 ? "fknhfdfiekkknkkkhlkh";
2545 RETURN
2550 ? "gijekkifkkieokieilki";
2551 ? "jjfkkilkkifkkifijcgm";
2552 ? "mfkkijjgifkkififmehl";
2553 ? "jeibcjjjjekififdjgij";
2554 ? "fdjfkhfmfkkhgokkhjfh";
2555 RETURN
2560 ? "ekhgigifkknijgigijei";
2561 ? "gkkhjjfdgijjfhfhfokh";
2562 ? "mgighlkkhfhfkkigigkk";
2563 ? "jjcfkhbgkkknkifhjfib";
2564 ? "fhgkkkhjekkhbfkkhgoh";
2565 RETURN
2570 ? "gdcgkkicgkkkhgigijei";
2571 ? "figheifkhbekkhfhjfkh";
2572 ? "ifokifnknakkkigkokig";
2573 ? "jbgifijbjfkkdjjbgifh";
2574 ? "fhjfdfhjfkkkifhfhlkd";
2575 RETURN
2580 ? "gijgkkicgigilkkdbfkd";
2581 ? "clhjgdfkhfhjcgkkokib";
2582 ? "ilijjgkigkilkhgkdghl";
2583 ? "jjjjjjghfijlkkhgkhbj";
2584 ? "fhjfohfnkhccgkkhenoh";
2585 RETURN
2590 ? "gifkkkicbgibligkifki";
2591 ? "jjekkkokohfmjfoifkic";
2592 ? "mcgigiekkkkmjbblkilk";
2593 ? "fkhjjjgkigijjjjfijfi";
2594 ? "ekifhfhbfhfhlhfkhjeh";
2595 RETURN
2600 ? "gkheknkokieijgigifki";
2601 ? "jgkkkokibjbfohjjjgkh";
2602 ? "mjgigkijfohgkkhjcfkn";
2603 ? "jfhjfdjfkigokkkhgkij";
2604 ? "fkifkkondfoknkkkhbcc";
2605 RETURN
2610 ? "gdfkigkhgkkilkkkkmgi";
2611 ? "jgkkhjgkhgijjekknhjj";
2612 ? "mjgkkohgijjlokkilkml";
2613 ? "jlokkkijjjjjgigmjbcj";
2614 ? "fhgkkkhjfhfhjfhfhlkh";
2615 RETURN
2620 ? "gdfkigkhgkkilkkkkmgi";
2621 ? "jgkkhjgkhgijjekknhjj";
2622 ? "mjgkkohgijjlokkilkml";
2623 ? "jlokkkijjjjjgigmjbcj";
2624 ? "fhgkkkhjfhfhjfhfhlkh";
2625 RETURN
2700 POSITION 0,1:? "gnnnnnnnnnnnnnnnn
nni";
2710 FOR I=1 TO 8:? "l
  m";:NEXT I
2720 ? "foooooooooooooooooooh";
2730 RETURN
2999 REM END
3000 ? CHR$(125):POSITION 13,0:? "Atar
i User"
3005 POKE 756,224
3010 POSITION 2,2:? "santas grotto"
3020 POSITION 2,3:? PRES;" PRESENTS
        COLLECTED"
3030 POSITION 0,6
3040 IF PRES<20 THEN ? "THERE'S GOING
TO BE A LOT OF":? "DISAPPOINTED CHILDR
EN!":GOTO 3100
3050 IF PRES<50 THEN ? "AT LEAST SOME
PEOPLE WILL GET PRESENTS":GOTO 3100
3060 IF PRES<100 THEN ? "GOOD.CHRISTMA
S WILL BE A HAPPY ONE"
3070 ? "EXCELLENT! HAPPY CHRISTMAS TO
ONE & ALL"
3100 IF PEEK(53279)<>7 THEN POKE 53277
,0:RUN
3110 GOTO 3100
19999 REM INITIALIZE
20000 GRAPHICS 0
20010 DL=PEEK(560)+PEEK(561)*256:REM
SET UP SCREEN WITH CUSTOM DISPLAY LIST

20020 POKE 755,0:POKE 752,1:POKE 82,0:
POKE DL+3,64+2
20030 FOR I=6 TO 15:POKE DL+I,7:NEXT I
20040 POKE DL+16,2:POKE DL+17,2:POKE D
L+18,65:POKE DL+19,PEEK(560):POKE DL+2
0,PEEK(561)
20050 RAMTOP=PEEK(106):R=RAMTOP*256:RE
M FIND TOP OF MEMORY
20060 SC=PEEK(88)+PEEK(89)*256+40:REM
FIND TOP OF SCREEN
20070 SETCOLOR 1,14,10:SETCOLOR 2,0,0:
SETCOLOR 3,2,8:SETCOLOR 0,8,10
20080 POSITION 3,2:? "S A N T A ' S":P
OSITION 4,4:? "G R O T T O"
20090 POSITION 10,7:? "By Mike Rowe 19
86":POSITION 13,0:? "Atari User"
20100 DIM CHSET$(50)
20105 RESTORE 28000:FOR I=1 TO 40:READ
 A:CHSET$(I)=CHR$(A):NEXT I
20110 CH=RAMTOP-20:CHBASE=CH*256:A=USR
(ADR(CHSET$),CHBASE,4)
20115 RESTORE 25000
20120 FOR I=0 TO 159:READ A:POKE CHBAS
E+97*8+I,A:NEXT I:REM REDEFINE CHARAC
TERS
20130 FOR I=64*8 TO 64*8+7:POKE CHBASE
+I,0:NEXT I
20200 DIM RT(100),RB(100):RT(0)=11:RB(
0)=10
```

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20220 FOR I=1 TO 99:RT(I)=INT(RND(0)*1
2):RB(I)=INT(RND(0)*12):NEXT I:REM RA
NDOMIZE MAZE
20230 DIM PRES(100):FOR I=0 TO 99:PRES
(I)=INT(RND(0)*200):NEXT I:REM LOCATE
 PRESENT IN EACH ROOM
20240 PRES=0
20250 DIM SACKS(10):FOR I=0 TO 9:SACKS
(I)=INT(RND(0)*100):NEXT I
21000 DIM M$(39)
21005 RESTORE 27000:FOR I=1 TO 39:READ
 A:M$(I)=CHR$(A):NEXT I
21010 PMBASE=RAMTOP-16:PMB=PMBASE*256:
REM RESERVE MEMORY FOR PLAYER MISSILE
S
21020 POKE 54279,PMBASE:POKE 623,32
21030 POKE 704,56:POKE 705,14
21040 RESTORE 26000:FOR I=0 TO 159:REA
D A:POKE 1536+I,A:NEXT I:REM READ IN
SANTA PMG DATA
21050 P11=1536:P12=1556:P13=1576:P14=1
596:P21=1616:P22=1636:P23=1656:P24=167
6
21055 POKE 53248,48:POKE 53249,48
21060 XP=48:YP=56
21070 POKE 53277,3:POKE 559,62
21080 POKE PMB,0:A=USR(ADR(M$),PMB,PMB
+1,2048)
21090 A=USR(ADR(M$),1596,YP+1024+PMB,2
0):REM DRAW PLAYER 1ST COLOUR
21095 A=USR(ADR(M$),1676,YP+1280+PMB,2
0):REM DRAW PLAYER 2ND COLOUR
22000 POSITION 0,1:R1=0:R2=0
22010 ROOM=0:ROUTINE=200
22020 DIM TRY(3):TRY=1:DIM TEXT$(40)
22030 POKE 756,CH+2
22040 TIME=2000
22050 POSITION 13,0:? "SANTA'S GROTTO"
24990 GOTO 2015
24999 REM CHARACTER DATA
25000 DATA 0,0,0,0,0,0,0,0
25010 DATA 255,129,129,129,129,129,129
,129
25020 DATA 129,129,129,129,129,129,129
,255
25030 DATA 255,1,1,1,1,1,1,255
25040 DATA 255,128,128,128,128,128,128
,255
25050 DATA 128,128,128,128,128,128,128
,255
25060 DATA 255,128,128,128,128,128,128
,128
25070 DATA 1,1,1,1,1,1,1,255
25080 DATA 255,1,1,1,1,1,1,1
25090 DATA 129,129,129,129,129,129,129
,129
25100 DATA 255,0,0,0,0,0,0,255
25110 DATA 128,128,128,128,128,128,128
,128
25120 DATA 1,1,1,1,1,1,1,1
25130 DATA 255,0,0,0,0,0,0,0
25140 DATA 0,0,0,0,0,0,0,255
25150 DATA 0,63,67,253,253,205,254,252
25160 DATA 0,0,56,56,124,126,126,60
25170 DATA 0,0,24,24,24,255,255,0
25180 DATA 0,24,60,126,126,60,24,0
25190 DATA 255,255,255,255,255,255,255
,255
25999 REM PLAYER DATA
26000 DATA 0,0,56,24,24,16,60,44,54,58
,62,62,36,54,0,0,0,0,0,0
26010 DATA 0,0,28,24,24,8,60,52,108,92
,124,124,36,108,0,0,0,0,0,0
26020 DATA 0,0,24,16,24,60,126,126,126
,126,60,60,36,108,0,0,0,0,0,0
26030 DATA 0,0,24,24,0,60,126,118,126,
126,60,60,36,54,0,0,0,0,0,0
26040 DATA 0,0,0,64,0,8,4,16,8,4,0,0,0
,0,0,0,0,0,0,0
26050 DATA 0,0,0,2,0,16,32,8,16,32,0,0
,0,0,0,0,0,0,0,0
26060 DATA 0,0,0,8,0,0,0,0,0,0,0,0,0,0
,0,0,0,0,0,0
26070 DATA 0,0,0,0,24,24,0,8,0,8,0,0,0
,0,0,0,0,0,0,0
27000 DATA 104,104,133,215,104,133,214
,104,133,217,104,133,216,104,133,218
27010 DATA 104,170,160,0,177,214,145,2
16,200,208,4,230,215,230,217,202
27020 DATA 208,242,198,218,16,238,96
28000 DATA 104,104,133,207,104,133,206
,104,104,133,212,169,0,133,204,169
28010 DATA 224,133,205,162,1,160,0,177
,204,145,206,200,208,249,230,205
28020 DATA 230,207,232,228,212,208,240
,96
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Get it right!

LINE	CHSUM	LINE	CHSUM	LINE	CHSUM
10	10014	12	9762	14	9946
16	9818	20	1898	50	17628
55	20356	60	16259	65	20359
70	18243	72	12183	75	13468
80	17844	82	12188	85	13478
90	13483	99	7071	100	29385
110	15461	120	18506	125	4784
130	14233	140	2006	150	8832
190	1608	199	14787	200	11942
210	3913	220	3841	230	3866
250	23884	260	8282	290	1498
299	6462	300	3382	310	2546
320	1345	330	2813	340	7616
350	2203	355	5910	360	3371
399	10322	400	3382	410	2550
420	1345	430	4090	435	4018
440	3061	450	2428	460	6299
490	1608	499	12698	500	3932
510	17237	540	8078	550	16645
560	2039	570	6335	575	2321
580	1498	590	11371	595	8094
599	13008	600	8122	610	3660
620	4864	630	1642	640	3710
650	4293	652	4389	655	1642
660	3712	670	4397	680	3570
685	18555	690	1498	699	10497
700	17955	710	8552	750	8207
790	1498	799	9544	800	16087
820	17473	840	1498	899	12885
900	4128	910	3892	920	7191
930	1498	999	9590	1000	1956
1010	4688	1020	10122	1030	2876
1040	3876	1050	5988	1060	11211
1070	8891	1080	6335	1090	3724
1099	9594	1100	1956	1110	4693
1120	6421	1140	5488	1150	5988
1160	8976	1180	6335	1190	3724
1199	9598	1200	1956	1210	4698
1220	11986	1230	5140	1240	3876
1250	5988	1260	11126	1270	2728
1280	6335	1290	3724	1299	9598
1300	2348	1310	4703	1320	6524
1330	3380	1340	3876	1350	5988
1360	6305	1370	11037	1380	6241
1390	3724	1400	1848	1500	1851
1600	1854	1700	1848	1800	1851
1900	1854	1999	7437	2000	5387
2010	8318	2015	2348	2020	1862
2100	5408	2110	8029	2115	2348
2120	1862	2200	5401	2210	3192
2212	7303	2214	6090	2215	2348
2216	6094	2220	1862	2300	5422
2310	3023	2312	7303	2314	6090
2315	2348	2316	6094	2400	2561
2410	4090	2420	4018	2430	3796
2440	8671	2450	11013	2460	1345
2490	1608	2500	6880	2501	6904

LINE	CHSUM	LINE	CHSUM	LINE	CHSUM
2502	6854	2503	6918	2504	6943
2505	1498	2510	6952	2511	6845
2512	6975	2513	6889	2514	6907
2515	1498	2520	6929	2521	6967
2522	6880	2523	6897	2524	6810
2525	1498	2530	6884	2531	6923
2532	6977	2533	6887	2534	6825
2535	1498	2540	6998	2541	6910
2542	6917	2543	6920	2544	6922
2545	1498	2550	6931	2551	6924
2552	6929	2553	6838	2554	6928
2555	1498	2560	6892	2561	6893
2562	6935	2563	6879	2564	6933
2565	1498	2570	6878	2571	6814
2572	6931	2573	6838	2574	6836
2575	1498	2580	6863	2581	6824
2582	6929	2583	6913	2584	6913
2585	1498	2590	6887	2591	6948
2592	6936	2593	6898	2594	6815
2595	1498	2600	6916	2601	6934
2602	6973	2603	6901	2604	6913
2605	1498	2610	6940	2611	6943
2612	7044	2613	6959	2614	6876
2615	1498	2620	6940	2621	6943
2622	7044	2623	6959	2624	6876
2625	1498	2700	9902	2710	6724
2720	7206	2730	1498	2999	3627
3000	8282	3005	2117	3010	7318
3020	9455	3030	2363	3040	16255
3050	13081	3060	10959	3070	8221
3100	7148	3110	1855	19999	7525
20000	2039	20010	29033	20020	8362
20030	5842	20040	14719	20050	18396
20060	16733	20070	11669	20080	10711
20090	13892	20100	2683	20105	11174
20110	10417	20115	2468	20120	22111
20130	7887	20200	5964	20220	21577
20230	28234	20240	1286	20250	10960
21000	1654	21005	10237	21010	28571
21020	5508	21030	4103	21040	25747
21050	12012	21055	4652	21060	2177
21070	4362	21080	7303	21090	20789
21095	20756	22000	4263	22010	3814
22020	5811	22030	2351	22040	1809
22050	6228	24990	1879	24999	10004
25000	3124	25010	5652	25020	5657
25030	3906	25040	5634	25050	5635
25060	5632	25070	3412	25080	3426
25090	5657	25100	3890	25110	5633
25120	3146	25130	3407	25140	3391
25150	5033	25160	4669	25170	4209
25180	4391	25190	5647	25999	7840
26000	8413	26010	8999	26020	9161
26030	8944	26040	6830	26050	7115
26060	6556	26070	6756	27000	10287
27010	9743	27020	4777	28000	9894
28010	9795	28020	5476		

Once-Over

Back-up your discs quickly and easily with RICHARD VANNER's single pass disc duplicator

HAVE you ever accidentally wiped out a couple of days work simply because you forgot to back-up your main work disc? Most programmers have – probably it seemed just too much bother to go through all that tedious disc swapping involved in a duplicate disc operation.

If you've ever had this problem, Once-Over, Program I, is the solution you have been looking for.

It is a disc back-up program that can copy an entire single density disc in just one pass.

To do this you must have a 130XE – or an upgraded 800XL – because the program uses the extra 64k of banked memory to store part of the 92k of data from the disc. It will *not* allow you to duplicate commercial copy-protected discs.

Once-Over is designed to be easy to use and very fast. The options available to you are displayed on one main menu screen.

Option 1 will read a single density disc from the source drive into the Once-Over buffer. You can monitor the progress of the load by watching the fuel-gauge at the bottom of the screen.

Option 2 saves out all the data in the buffer on to the disc in the destination drive. This operation may be carried out as many times as you like if you want to make multiple copies.

Option 3 toggles write verify on and off. If it is selected, the data will be checked back after it has been written to the destination disc. This has the side effect of slowing down the duplication.

Option 4 toggles the format disc function. The destination disc will be formatted before any data is written to it.

Option 5 changes the source disc drive number. This option will cycle through drives one to four.

Option 6 cycles the destination disc drive number from one to four.

Pressing System Reset will allow you to exit from a load or save operation. The contents of the buffer will remain intact.

Type in the Basic listing and save it, then place a formatted disc in drive 1 and run the program. If an error occurs then the data is not correct and you should use Get It Right! to track the problem down.

Once the data is correct it will create a nine sector disc file called ONCEOVER.OBJ. This is the Once-Over machine code file. To use it, simply go to the DOS menu and use the binary load option – L.

This file is completely self-contained and may be copied on to any of your work discs. You could even rename it as AUTORUN.SYS and have it run automatically on power up.

For machine code programmers I have also provided the full assembly listing – Program II – which will create exactly the same object file as the Basic version. ■

Program I: Basic listing

```
1 REM ***    ONCE - OVER      ***
2 REM *** BINARY FILE CREATOR ***
3 REM *** (C) 1986 ATARI USER ***
4 REM *** BY  RICHARD VANNER  ***
5 POKE 752,1:? "K↓↓    Please wait - C
hecking DATA."
10 TRAP 100:TOT=0:FOR A=1 TO 1099
20 READ DAT:TOT=TOT+DAT
30 NEXT A
35 TRAP 40000:RESTORE 1000
40 IF TOT<>93825 THEN GOTO 100
50 OPEN #1,8,0,"D:ONCEOVER.OBJ"
60 FOR A=1 TO 1099:READ DAT
70 PUT #1,DAT
80 NEXT A
90 ? "↓   'D:ONCEOVER.OBJ' file create
d.":END
100 ? "K↓↓         ERROR - Data incorrec
t":END
1000 DATA 255,255,224,2,225,2,182,33,0
,32,251,32,112,112,112,71,58,32,7,7
1010 DATA 112,6,0,6,0,6,0,6,0,6,0,6,11
2,2,32,2,2,0,2,32
1020 DATA 2,65,0,32,169,0,141,48,2,169
,32,141,49,2,169,10,141,197,2,169
1030 DATA 58,141,196,2,169,196,141,198
,2,96,47,0,46,0,35,0,37,0,0,13
1040 DATA 13,0,0,47,0,54,0,37,0,50,0,0
,0,0,0,0,0,0,0,162
1050 DATA 185,0,0,0,0,0,0,0,0,0,0,114,
105,99,104,97,114,100,0,0
1060 DATA 0,0,118,97,110,110,101,114,0
,0,145,0,44,47,33,36,0,34,53,38
1070 DATA 38,37,50,0,0,0,0,0,0,0,146,0
,51,33,54,37,0,34,53,38
1080 DATA 38,37,50,0,0,0,0,0,0,0,147,0
,55,50,41,52,37,0,54,37
1090 DATA 50,41,38,57,0,0,0,185,165,17
9,148,0,38,47,50,45,33,52,0,36
1100 DATA 41,51,43,0,0,0,0,185,165,179
,149,0,51,47,53,50,35,37,0,36
1110 DATA 41,51,43,0,0,0,0,0,0,145,150
,0,36,37,51,52,41,46,33,52
1120 DATA 41,47,46,0,36,41,51,43,0,145
,165,173,176,180,185,142,252,128,128,1
28
1130 DATA 128,128,128,128,252,32,247,3
3,180,178,161,163,171,128,162,181,166,
166,165,178
1140 DATA 128,128,128,128,128,128,128,
128,252,166,181,172,172,142,0,0,0,0,0,
0
1150 DATA 0,0,0,17,0,0,0,0,0,0,0,0,0,1
8,0,0,0,0,0,0
1160 DATA 0,0,0,19,0,0,0,0,0,0,0,0,0,2
0,17,18,19,20,21,22
1170 DATA 23,24,25,16,17,18,19,20,21,2
2,23,24,25,16,17,18,19,20,21,22
1180 DATA 23,24,25,16,17,18,19,20,21,2
2,23,24,25,16,0,0,0,0,0,0
1190 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0
1200 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,
128,175,238,227,229,128
1210 DATA 175,246,229,242,128,128,226,
249,128,128,178,233,227,232,225,242,22
8,128,182,225
1220 DATA 238,238,229,242,128,128,179,
229,240,244,128,135,152,150,169,0,141,
68,2,169
1230 DATA 2,133,9,169,182,133,2,169,33
,133,3,32,32,32,32,90,35,201,31,240
1240 DATA 29,201,30,240,31,201,26,240,
33,201,24,208,3,76,43,34,201,29,208,3
1250 DATA 76,90,34,201,27,208,223,76,1
14,34,32,138,34,76,202,33,32,155,34,76
```

```
1260 DATA 248,33,243,34,202,33,173,77,
35,201,80,240,21,169,80,141,77,35,162,
0
1270 DATA 189,74,35,157,175,32,232,224
,3,208,245,76,202,33,169,87,141,77,35,
162
1280 DATA 0,189,71,35,157,175,32,232,2
24,3,208,245,76,202,33,173,78,35,208,2
1
1290 DATA 169,1,141,78,35,162,0,189,71
,35,157,195,32,232,224,3,208,245,76,20
2
1300 DATA 33,169,0,141,78,35,162,0,189
,74,35,157,195,32,232,224,3,208,245,76
1310 DATA 202,33,238,79,35,173,79,35,2
01,5,208,5,169,1,141,79,35,24,105,144
1320 DATA 141,217,32,76,202,33,238,80,
35,173,80,35,201,5,208,5,169,1,141,80
1330 DATA 35,24,105,144,141,237,32,76,
202,33,32,35,36,169,82,141,83,35,173,7
9
1340 DATA 35,141,156,35,76,202,34,32,3
5,36,173,78,35,240,24,169,33,141,2,3
1350 DATA 169,47,141,4,3,169,36,141,5,
3,173,80,35,141,1,3,32,83,228,173
1360 DATA 80,35,141,156,35,173,77,35,1
41,83,35,76,202,34,169,1,141,86,35,169
1370 DATA 0,141,82,35,141,81,35,141,87
,35,141,2,35,174,2,35,189,253,34,32
1380 DATA 3,35,238,2,35,173,2,35,201,5
,208,237,169,1,141,84,244,34,239,35
1390 DATA 35,169,0,141,85,35,76,35,35,
243,227,235,231,239,0,141,1,211,32,137
1400 DATA 35,173,83,35,141,2,3,32,179,
35,32,161,35,32,206,35,238,84,35,173
1410 DATA 84,35,201,129,208,231,96,169
,0,141,88,35,169,128,141,89,35,173,83,
35
1420 DATA 141,2,3,32,179,35,32,161,35,
32,206,35,238,84,35,173,84,35,201,81
1430 DATA 208,231,96,185,165,179,0,174
,175,87,1,1,1,0,0,0,0,0,0,0
1440 DATA 0,0,169,255,141,252,2,173,11
,212,208,251,165,20,141,10,212,141,23,
208
1450 DATA 24,105,1,174,11,212,224,50,2
08,240,173,197,2,141,23,208,173,252,2,
201
1460 DATA 255,240,220,72,32,5,36,104,9
6,169,1,141,84,35,169,0,141,85,35,141
1470 DATA 88,35,169,64,141,89,35,169,2
,141,1,3,96,173,88,35,24,105,128,141
1480 DATA 88,35,173,89,35,105,0,141,89
,35,96,173,86,35,141,10,3,173,87,35
1490 DATA 141,11,3,173,88,35,141,4,3,1
73,89,35,141,5,3,76,83,228,238,86
1500 DATA 35,173,86,35,208,3,238,87,35
,238,81,35,173,81,35,201,18,208,19,174
1510 DATA 82,35,189,102,33,73,128,157,
102,33,169,0,240,35,46,36,141,81,35,23
8
1520 DATA 82,35,96,165,20,141,4,36,165
,20,205,4,36,240,249,96,0,169,0,141
1530 DATA 8,210,169,3,141,15,210,169,4
0,141,0,210,162,15,138,9,160,141,1,210
1540 DATA 32,247,35,202,16,244,96,169,
0,170,157,102,33,232,224,40,208,248,96
```

Get it right!

LINE	CHSUM	LINE	CHSUM	LINE	CHSUM
1	4596	2	5783	3	5049
4	5491	5	10209	10	5469
20	4207	30	1329	35	4324
40	4734	50	5197	60	4582
70	1889	80	1349	90	8271
100	10925	1000	10230	1010	7499
1020	10095	1030	9555	1040	7616
1050	8674	1060	9765	1070	8339
1080	8352	1090	9619	1100	9417
1110	9001	1120	11128	1130	12482
1140	10862	1150	6763	1160	7699
1170	9758	1180	8691	1190	6532
1200	8335	1210	12967	1220	12276
1230	10328	1240	10560	1250	10703
1260	10909	1270	11458	1280	10974
1290	10979	1300	10779	1310	10652
1320	10628	1330	10974	1340	10614
1350	10009	1360	10822	1370	10388
1380	10360	1390	10697	1400	10590
1410	11268	1420	10693	1430	9098
1440	11266	1450	11226	1460	10747
1470	10716	1480	10488	1490	10084
1500	10833	1510	10984	1520	10346
1530	10667	1540	10770		

Program II: Assembler listing

```
0100 ;        ONCE - OVER.
0110 ;       --------------
0120 ;
0130 ;  Single density disk copier
0140 ;
0150 ;  ATARI USER,  December 1986
0160 ;
0170 ;      By  Richard Vanner
0180 ;
0190     *=  $02E0   ;RUN-ADDRESS
0200     .WORD START
0210 ;
0220 ;DISK EQUATES
0230 ;
0240 DSKINV = $E453
0250 PVSECTOR = $57
0260 PSECTOR = $50
0270 GSECTOR = $52
0280 FORMAT = $21
0290 DEVICE = $0301
0300 DCOMND = $0302
0310 DSTATS = $0303
0320 DBUFLO = $0304
0330 DBUFHI = $0305
0340 DAUX1 = $030A
0350 DAUX2 = $030B
0360 ;
0370 ;DISPLAY LIST EQUATES
0380 ;
0390 BLANK1 = 0
0400 BLANK3 = $20
0410 BLANK8 = $70
0420 GR0 =   $02
0430 GR1 =   $06
0440 GR2 =   $07
0450 LMS =   $40
0460 WVB =   $41
0470 SDLSTL = $0230
0480 ;
0490     *=  $2000
0500 ;
0510 ;Display list
0520 ;
0530 DLIST .BYTE BLANK8,BLANK8,BLANK8
0540       .BYTE GR2+LMS
0550       .WORD SCREEN
0560       .BYTE GR2,GR2
0570       .BYTE BLANK8,GR1
0580       .BYTE BLANK1,GR1
0590       .BYTE BLANK1,GR1
0600       .BYTE BLANK1,GR1
0610       .BYTE BLANK1,GR1
0620       .BYTE BLANK1,GR1
0630       .BYTE BLANK8,GR0,BLANK3,GR0,GR0
0640       .BYTE BLANK1,GR0,BLANK3,GR0
0650       .BYTE WVB
0660       .WORD DLIST
0670 ;
0680 ;Set up Display List
0690 ;
0700 SETDL LDA #DLIST&255
0710       STA SDLSTL
0720       LDA #DLIST/256
0730       STA SDLSTL+1
0740       LDA #$0A
0750       STA 709
0760       LDA #$3A
0770       STA 708
0780       LDA #$C4
0790       STA 710
0800       RTS
0810 ;
0820 ;SCREEN STARTS HERE
0830 ;
0840 SCREEN
0850       .SBYTE "O N C E  --  O V E R"
0860       .SBYTE "          BY         "
0870       .SBYTE " richard    vanner  "
0880       .SBYTE "1 LOAD BUFFER       "
0890       .SBYTE "2 SAVE BUFFER       "
0900 WVS =   *+17
0910       .SBYTE "3 WRITE VERIFY   YES"
0920 FS  =   *+17
0930       .SBYTE "4 FORMAT DISK    YES"
0940 SCS =   *+19
0950       .SBYTE "5 SOURCE DISK      1"
0960 DES =   *+19
0970       .SBYTE "6 DESTINATION DISK 1"
0980       .SBYTE "EMPTY.           TRACK BUFF
ER          FULL."
0990       .SBYTE "         1         2
    3         4"
1000       .SBYTE "123456789012345678901234
567890123456789 0"
1010 SCREENB
1020       .SBYTE "
```

```
"
1030     .SBYTE " Once Over  by  Richard 
Vanner  Sept '86"
1040 ;
1050 ; MAIN PROGRAM CODE
1060 ;
1070 START
1080     LDA #0      ;Set up System
1090     STA $0244   ;Reset
1100     LDA #2      ;Vector
1110     STA 9
1120     LDA #START&255
1130     STA 2
1140     LDA #START/256
1150     STA 3
1160     JSR SETDL
1170 ;Wait for a key to be pressed
1180 START0 JSR KEY
1190     CMP #31     ;1
1200     BEQ LOAD
1210     CMP #30     ;2
1220     BEQ SAVE
1230     CMP #26     ;3
1240     BEQ WRITE
1250     CMP #24     ;4
1260     BNE OPTION1
1270     JMP FORMAT0
1280 OPTION1 CMP #29 ;5
1290     BNE OPTION2
1300     JMP SOURCE
1310 OPTION2 CMP #27 ;6
1320     BNE START0  ;Key not valid.
1330     JMP DEST
1340 LOAD JSR LOADBUFFER ;Load buffer
1350     JMP START0  ;Next option
1360 SAVE JSR SAVEBUFFER ;Save buffer
1370     JMP START0  ;Next option
1380 ;
1390 ;Write with verify toggle
1400 WRITE LDA WV
1410     CMP #PSECTOR ;Verify on?
1420     BEQ WRITE2  ;No
1430     LDA #PSECTOR ;Yes turn off
1440     STA WV
1450     LDX #0      ;Print No to screen
1460 WRITE1 LDA NO,X
1470     STA WVS,X
1480     INX
1490     CPX #3
1500     BNE WRITE1
1510     JMP START0
1520 WRITE2 LDA #PVSECTOR ;Set Verify on
1530     STA WV
1540     LDX #0      ;Print Yes to screen
1550 WRITE3 LDA YES,X
1560     STA WVS,X
1570     INX
1580     CPX #3
1590     BNE WRITE3
1600     JMP START0
1610 ;
1620 ;Format destination toggle
1630 ;
1640 FORMAT0 LDA FMT
1650     BNE NFORMAT
1660     LDA #1
1670     STA FMT
1680     LDX #0
1690 FORMAT2 LDA YES,X
1700     STA FS,X
1710     INX
1720     CPX #3
1730     BNE FORMAT2
1740     JMP START0
1750 NFORMAT LDA #0
1760     STA FMT
1770     LDX #0
1780 NFORMAT2 LDA NO,X
1790     STA FS,X
1800     INX
1810     CPX #3
1820     BNE NFORMAT2
1830     JMP START0
1840 ;
1850 ;Select Source disk option.
1860 ;
1870 SOURCE INC SC
1880     LDA SC
1890     CMP #5
1900     BNE SOURCE2
1910     LDA #1
1920     STA SC
1930 SOURCE2 CLC
1940     ADC #$90
1950     STA SCS
1960     JMP START0
1970 ;
1980 ;Select Destination disk option.
1990 ;
2000 DEST INC DE
2010     LDA DE
2020     CMP #5
2030     BNE DEST2
2040     LDA #1
2050     STA DE
2060 DEST2 CLC
2070     ADC #$90
2080     STA DES
2090     JMP START0
2100 ;
2110 ;Load Buffer from source disk.
2120 ;
```



```
2130 LOADBUFFER JSR CLEARBUFF
2140     LDA #GSECTOR
2150     STA COMMAND
2160     LDA SC
2170     STA DISKNUM
2180     JMP START1
2190 ;
2200 ;Save Buffer to destination disk.
2210 ;
2220 SAVEBUFFER JSR CLEARBUFF
2230     LDA FMT
2240     BEQ SAVEBUFFER2
2250     LDA #$21
2260     STA DCOMND
2270     LDA #B128&255
2280     STA DBUFLO
2290     LDA #B128/256
2300     STA DBUFHI
2310     LDA DE
2320     STA DEVICE
2330     JSR DSKINV
2340 SAVEBUFFER2 LDA DE
2350     STA DISKNUM
2360     LDA WV
2370     STA COMMAND
2380     JMP START1
2390 ;
2400 ;Set disk params
2410 ;
2420 START1 LDA #1
2430     STA SECTOR
2440     LDA #0
2450     STA POSITION
2460     STA COUNT18
2470     STA SECTOR+1
2480     STA BSELECT
2490 ;Select Memory banks
2500 START2 LDX BSELECT
2510     LDA BANKS,X
2520     JSR GBLOCK
2530     INC BSELECT
2540     LDA BSELECT
2550     CMP #5
2560     BNE START2
2570     LDA #1
2580     STA SCOUNT
2590     LDA #0
2600     STA SCOUNT+1
2610 ;Last 10K to be loaded.
2620     JMP G10K
2630 ;
2640 BANKS .BYTE 243,227,235,231,239
2650 BSELECT .BYTE 0
2660 ;
2670 ;Load/Save 16K block $4000-$7FFF
2680 ;
2690 GBLOCK STA $D301
2700     JSR INITDISK
2710 GBLOCK2
2720     LDA COMMAND
2730     STA DCOMND
2740     JSR SETDISK
2750     JSR BUFF128
2760     JSR SPLUS1
2770     INC SCOUNT
2780     LDA SCOUNT
2790     CMP #129
2800     BNE GBLOCK2
2810     RTS
2820 ;
2830 ;Load/Save 10K block $8000-$A7FF
2840 ;
2850 G10K LDA #0
2860     STA BUFFER
2870     LDA #$80
2880     STA BUFFER+1
2890 G10K2 LDA COMMAND
2900     STA DCOMND
2910     JSR SETDISK
2920     JSR BUFF128
2930     JSR SPLUS1
2940     INC SCOUNT
2950     LDA SCOUNT
2960     CMP #81
2970     BNE G10K2
```

```
2980      RTS
2990 ;
3000 YES .SBYTE "YES"
3010 NO  .SBYTE " NO"
3020 WV  .BYTE PVSECTOR
3030 FMT .BYTE 1
3040 SC  .BYTE 1
3050 DE  .BYTE 1
3060 COUNT18 .BYTE 0
3070 POSITION .BYTE 0
3080 COMMAND .BYTE 0
3090 SCOUNT .WORD 0
3100 SECTOR .WORD 0
3110 BUFFER .WORD 0
3120 ;
3130 ;GET A KEY
3140 ;
3150 KEY LDA #255
3160      STA 764
3170 KEY2 LDA $D40B
3180      BNE KEY2
3190      LDA 20
3200 KEY3 STA $D40A
3210      STA $D017
3220      CLC
3230      ADC #1
3240      LDX $D40B
3250      CPX #50
3260      BNE KEY3
3270      LDA 709
3280      STA $D017
3290      LDA 764
3300      CMP #255
3310      BEQ KEY2
3320      PHA
3330      JSR BELL
3340      PLA
3350      RTS
3360 INITDISK LDA #1
3370      STA SCOUNT
3380      LDA #0
3390      STA SCOUNT+1
3400      STA BUFFER
3410      LDA #$40
3420      STA BUFFER+1
3430 DISKNUM = *+1
3440      LDA #2
3450      STA DEVICE
3460      RTS
3470 BUFF128 LDA BUFFER
3480      CLC
3490      ADC #128
3500      STA BUFFER
3510      LDA BUFFER+1
3520      ADC #0
3530      STA BUFFER+1
3540      RTS
3550 SETDISK LDA SECTOR
3560      STA DAUX1
3570      LDA SECTOR+1
3580      STA DAUX2
3590      LDA BUFFER
3600      STA DBUFLO
3610      LDA BUFFER+1
3620      STA DBUFHI
3630      JMP DSKINV
3640 SPLUS1 INC SECTOR
3650      LDA SECTOR
3660      BNE SPLUS2
3670      INC SECTOR+1
3680 SPLUS2
3690      INC COUNT18
3700      LDA COUNT18
3710      CMP #18
3720      BNE SPLUS4
3730      LDX POSITION
3740      LDA SCREENB,X
3750      EOR #$80
3760      STA SCREENB,X
3770      LDA #0
3780      STA COUNT18
3790      INC POSITION
3800 SPLUS4 RTS
3810 JIFFY LDA 20
3820      STA JIFFY3
3830 JIFFY2 LDA 20
3840      CMP JIFFY3
3850      BEQ JIFFY2
3860      RTS
3870 JIFFY3 .BYTE 0
3880 BELL LDA #0
3890      STA $D208
3900      LDA #3
3910      STA $D20F
3920      LDA #40
3930      STA $D200
3940      LDX #15
3950 BELL2 TXA
3960      ORA #$A0
3970      STA $D201
3980      JSR JIFFY
3990      DEX
4000      BPL BELL2
4010      RTS
4020 CLEARBUFF LDA #0
4030      TAX
4040 CBUFF2 STA SCREENB,X
4050      INX
4060      CPX #40
4070      BNE CBUFF2
4080      RTS
4090 B128 *= *+128
```

JUMBLED DATA STORAGE STRINGS

I AM having problems with a data storage program in Basic.

```
10 DIM A$(100),B$(100)
20 FOR N=1 TO 5: INPUT A$:
B$(N)=A$: NEXT N
30 FOR M=1 TO 5: PRINT
B$(M): NEXT M
```

is meant to print out the five strings previously entered, but just jumbles them up.

In saving and loading information, variable ram holds some numbers. After opening channel 3 to the cassette and typing:

```
10 FOR N=1 TO 20:
PUT #3;NAM(N): NEXT N:
PRINT #3;CHR$(155)
```

... then loading it with:

```
10 GET #3,C
20 IF C<>155 THEN
NAM(Z)=C: Z=Z+1: GOTO 10
```

... it does not seem to work. Please could you help me out? – **Andrew Shuttleworth, Garstang, Lancs.**

● The answer to your first query is easy – you are trying to use *B$(N)* as a string array, which is not what it is at all.

B$(N) refers to a portion of a single string B$, beginning with the Nth character.

Atari Basic does not have string arrays as such, and DIM *B$(100)* simply reserves 100 characters as the maximum length for *B$*.

To get around the problem you must set up a long string, say 2,000 characters, and use substrings to represent the elements of your array.

See our reply to David Stockton's letter in the December 1985 issue for an example of how to do this.

In your second query the only thing which would seem to be at fault – assuming you have remembered to DIM your array and OPENed the files correctly of course – is your PRINT CHR$(155) at the end of the first line.

This will only print a carriage return on the screen, and should be replaced with a PRINT #3;CHR$(155); or, simpler still, with PUT#3,155.

Other than this, your program should you work fine. Let us know how you get on.

Aligning tape heads

ARE there any tape head adjustment packages for the Atari, as there are for most other makes of computer?

If not, would it be possible for you to give me some tips on adjusting the tape head? – **Peter Goulden, Lincoln.**

● There aren't any commerical tape alignment kits for the Atari that we know of, but it's not too hard to do a reasonable job yourself.

Firstly, on some recorders you'll need to remove the casing to get at the alignment screw. This is situated on the assembly that holds the play/record head, and allows you to move the head up and down very slightly. This is known as the azimuth adjustment screw.

Put a music cassette in the recorder and press Play. If you can record one yourself with nothing on the right hand audio track you will get even better results – assuming your stereo's heads are properly aligned.

Now type POKE 54018,52 to start the tape running, and adjust the screw until the best sound comes out of the TV loadspeaker. Be very careful not to touch the head itself with the screwdriver, or you will have to demagnetise the head again afterwards.

The head should be correctly aligned when the music is clearest – simple, isn't it?

If you don't feel confident of doing this without damaging the recorder, some dealers will be able to do it for you at a nominal cost.

Drawing the line...

I OWN an Atari 800XL. When I use the DRAWTO statement it draws a character key (Control+comma). Could you tell me what I can do to draw lines instead of hearts? – **Edwin Dickinson, Middlesbrough, Cleveland.**

● It sounds as though you are trying to use DRAWTO with a text screen. As the computer can only put characters on a text screen, it does its best to understand what you mean and draws a line of characters.

The heart shape is that of character number zero, and if you use a different COLOR number, you'll get different characters.

However, to draw real lines you will need to use a different screen mode. Try typing GRAPHICS 8, then COLOR 1, and then doing your PLOTs and DRAWTOs

Window on the 1020

AS usual I find the instruction manuals provided by Atari are almost without exception useless. The manual for the 1020 Printer Plotter is no exception.

It was with great pleasure therefore that I heard about the Victagraph Plot Window as this piece of equipment has a very good section on the 1020 and I feel that Atari might do well to copy it. The Plot Window itself is also very good.

As I understand it these items are now out of production but the manufacturers – Victagraphics, 7 Speechly Drive, Rugeley, Staffs, WS15 2PT. Tel: 08894 78230 – still have a number in stock at approximately £8 per set. – **Raymond Price, Canton, Cardiff.**

TV time for 800XL

I HAVE recently bought an 800XL computer with a cassette recorder and games.

There are approximately 1000 people in my school but I know of only one who has owned an Atari machine before, a 400.

The Atari computer has good capabilities and impressive sound and graphics, especially when compared with other machines. So, why is it so comparitively rare?

Incidentally, I have just read in the July issue about BBC TV programmes neglecting other makes of micros.

This is not strictly true. On Tuesday June 24, the BBC programme Think of a Number had on it an 800XL machine with the game Rescue on Fractallus running.

I find the Atari to be a prime example of a home computer and shall no doubt stay with Atari for years to come. – **B. Paterson, Ponteland, Newcastle-upon-Tyne.**

Missing eight squares

I HAVE just bought an Atari 800XL, with which I am pleased, but I have a slight problem.

When I use the memory test included in the brochure, instead of 48 squares appearing on the screen there are only 40. Is this normal or is

→

something wrong with the computer? – **D. Buckingham, Walsall, West Midlands.**

● The number of letters we get on this one is incredible! We thought that by now everyone had got it sorted out, but as new users come along they all run straight into the same headaches we all confronted when we started out.

The answer is that you will get 40 squares if you go to the Self-Test from Basic by typing BYE. This is because 8k of memory is still taken up by the Basic language itself.

If you hold down the Option key as you switch on Basic will be disabled and you will be able to get the full 48 squares.

ATARI USER Mailbag

WE welcome letters from readers – about your experiences using the Atari micros, about tips you would like to pass on to other users . . . and about what you would like to see in future issues.

The address to write to is:

Mailbag Editor
Atari User
Europa House
68 Chester Road
Hazel Grove
Stockport SK7 5NY

Space Maze messages

I HAVE two queries. First of all, I tried to type in your program Space Maze from Atari User's *July issue and line 170 of the program kept erroring. I have tried many times to correct this line but nothing works.*

Is there a misprint somewhere in the line?

I typed in the program from the August issue, Frank the Fruit Fiend, then listed it and typed in Save, remembering to move the tape 10 counts, waited for the two beeps pressed Play Record and then Returned it.

When the ready sign came up I stopped the cassette and rewound it. To load it I typed in CLOAD followed by Return, waited for the beep, pressed Play and Returned it.

The tape began to load but after a few counts the tape errored and has done so every time I have tried to load it. The error number 138 keeps appearing on the screen.

I have tried saving short programs to my cassette and then loading back into my computer without any success at all.

Please can you tell me – am I doing something wrong or is my computer not working properly? – **D. Percival, Elswick, Newcastle.**

● We've checked line 170 of Space Maze and there is no problem with it – indeed, we can't quite see how an error could be generated at run time either.

Possibly your problem may revolve around the old Rev. B Basic line entry bug, or a fault in your machine.

Try to let us know more details: "Line 170 keeps erroring" doesn't give us much to go on. For example, when does it error, what error number does it give, and also what are the contents of the variables afterwards if the error is at run time?

As to your second query, Error 138 means that the computer can't find the program it was looking for.

If you wound the tape forward to 10 on the counter when you recorded it, did you remember to do the same

YOUR HINTS AND TIPS

NINJA

IN the October issue of Atari User, *I read a review of the excellent Ninja, by Mastertronic. The reviewer, Bob Chappell couldn't seem to get up a level. Don't worry Bob, that was what I thought to start with.*

My brother found it out by accident. When you get all the idols on the first level, go to the Shijo entrance, look at the top of the screen for a black hole.

Move Ninja under this, and push the joystick up. Ninja will leap up to the next level.

This method applies to accessing all other levels at any time. You can also go down holes in the floor.

When you have six idols, keep going up and to the right.

When you reach a room called Grey Wall you should see a passage upwards. If the last idol is in Grey Wall, kill off the foes, get the idol, exit the room to the left and re-enter it again. The hole at the top will now appear.

Next move up the passage. When you enter the room you will see five foes, and the room is coloured blue.

First kill off the foes – easier said than done, though they do attack in two's – then grab the last idol and fall down the hole. Keep going down until you reach the first level. The enemies have reappeared.

Fight them off and keep going until you reach your Starting Locations (Torii in the Sea). You have now completed Ninja. – **Duncan Husband, Harrington, Worcs.**

MERCENARY ESCAPE

WITH reference to your excellent review on Mercenary Escape from Targ I would like to suggest a means of retrieving a craft without losing all the objects you are carrying at the time.

Press L to land if you are already in a craft. Drop all the objects you are carrying by pressing D.

Press the control key and Q to retrieve your ship and L to get out of your new ship.

Press T to take your objects back one by one. Board your ship again and you're away.

Not bad eh?

Also, to reach 9900 units per time part use the > key after pressing 0 while in your craft. Keep pressing this key until you reach the desired speed.

Different crafts can obtain different speeds – the Dominion Dart can achieve 9900 when it is airborne. – **Michael O'Connor, Dublin.**

MINDSHADOW

IN Mindshadow from Activision, in order to quit the island, enter: N – ENTER HUT – GET STRAW – S – E – GET STEEL – E – GET VINE – W – W – S – E – DROP ALL – GET VINE – TIE VINE ON ROCK – DOWN – W – DIG – GET MAP – READ MAP – GET ROCK – E – UP – GET ALL – W – N – N – N – E – N – E – E – S – S – E – GET BOTTLE – W – N – N – W – W – S – W – S – S – S – RUB STEEL WITH ROCK – GIVE BOTTLE.

However, I now feel like a prisoner on the boat. I know that I have to cut the chain on the winch in order to anchor the ship.

Someone told me to go to the kitchen and get the meat cleaver to do that job. But the crew won't let me pass to the south gate. Please, can anyone help me to escape? – **Alain Gayster, Paris.**

ONE MAN AND HIS DROID

I BOUGHT Mastertronic's One Man and his Droid some time ago, but I have a problem.

If all the droids are captured in the correct order, as well as points, a time bonus is obtained.

At the start of the game the

before trying to load it back in again?

If you can't get the CSAVEd version back in at all, why not try the version you LISTed for use with the checksum?

If the checksum managed to read it correctly, you can re-load it with ENTER "C:", and then you can try CSAVE-ing it again.

If you still can't get anything to CSAVE properly the problem may be with your equipment.

Take both the computer and the recorder back to your dealer for testing, as the fault could be with either – though it is more likely to be the recorder.

Translator disc

I WISH to buy a transdisc. Could you please advise me where to obtain one? – **Alastair Oliphant, Newton Mearns, Glasgow.**

● You can purchase a translator disc, which is what we think you mean, from any Atari mail order company. Typically they will just charge you just for a blank disc and postage, plus a nominal copying fee.

Elusive sprites

I HAVE recently acquired an Atari 800XL, and to supplement the rather flimsy manuals I have also bought the Atari XL hardback.

Although this is rather informative it does not tell you how to create multi-coloured sprites.

Also could you advise some books which will teach me machine code programming on the XL? – **Stephen Burton, Croxdale, Co. Durham.**

● Firstly, the Atari doesn't have multi-coloured sprites, so that explains why you are having problems generating them.

You can, of course, use two or more sprites and move them about together, which gives the same end result. See Stephen Williamson's recent series on Player Missile Graphics for more details.

If you want to start learning machine code try a book called Machine Language for Beginners from Compute! Books which will take you through the fundamentals in fairly easy stages.

You should also consider buying a memory map – such as Mapping the Atari from the same publishers.

All systems are go...

I'VE been reading Atari User for quite a while and I've noticed an advert for 2 Bit Systems' Replay Sampling System.

Recently I've noticed that it isn't in any more. Is this system still on the market as I'm very interested? I'd be very grateful if you could reply soon. – **L. Hunter, Middlesbrough, Cleveland**

● 2 Bit Systems is alive and well, and still supply the product you are interested in. If you drop them a line they will send you more information.

Waiting for the chop

I WOULD like to put a question via Atari User to the people at System Three Software. For well over a year now we have been seeing adverts for International Karate on the Atari 8 bit range.

But still we wait. Having written to System Three and receiving no reply, I am hoping you will be able to find out for us all if the game exists at all? – **Keven Joyce, Sheffield, South Yorks.**

● System Three Software say that the Atari version of International Karate will be in the shops by the time you read this.

---

time is 9999 seconds. If however all the droids are captured in say 1000 seconds, a time bonus of about 2000 seconds is issued.

But the total is 1099 – it does not seem to recognise 10000. So soon as the 1099 has run out, it does not carry on from 9999, it just runs out.

This is most annoying, and a good score cannot really be obtained. – **Mrs D.P. Bonnington, Stratford, London.**

SIX OF THE BEST

HERE are some tips for Atari games, I hope that your readers find them useful.

***Thrust** (Firebird): Having trouble getting past a level? As soon as you appear on screen, shoot the reactor until the ground starts flashing. After the countdown, the planet will blow up and you will warp to the next level.*

***Nuclear Nick** (Americana): If you haven't already realised, pressing Start and then Select will allow you to start on different levels.*

***Strip-poker I** (US Gold/Artworx): When playing on the Suzi level, and you have changed your cards, if Suzi says "I stay", 99 per cent of the time this means that she has a bad hand.*

So if you raise $25, the chances are that she will drop and you will win the money in the pot.

***Spellbound** (MAD): If your energy dwindles, get the bottle of liquid from the roof, give it to Florin the Dwarf and then take it back to increase your strength.*

To fix the control box in the lift, get the Moiner from Elrand Malflewen and give it to Thor. Summon Thor to the lift by using Somsun's elf-horn, ask him to help you using the word of command and Thor will hit the control box, then you can use the basement and ground floor. The key and red herring can both be read for clues.

***Mercenary** (Novagen): There is a Palyar Colony craft in the air. Its location is 64997 altitude at 08-08. When on the ground floor you can find a key.*

***The Eidolon** (Lucasfilm Games/Activision): To finish the first level you need the red jewel and you can kill the dragon with red fireballs.*

To finish the second level you need the green jewel and you can kill the dragon with yellow fireballs.

Level 3: blue jewel, green fireballs; Level 4: red and green jewels, blue fireballs; Level 5: blue and green jewels, yellow fireballs; Level 6: blue and red jewels, blue fireballs.

If you find yourself running out of energy when fighting the dragon keep hitting the spacebar quickly to collect all the fireballs the dragons shoot at you.

Keep up the great magazine – I look forward in anticipation to the next issue! – **Mark Stephens, Putney, London.**

CHIMERA

SOME hints on Chimera. First you need a spanner. You can eliminate electric fences with this by going up to them and pressing fire.

Eliminate all fences, then get the bolt and go to a blue room and press fire. Then you will need bread.

Go to a toaster and press fire.

You need to follow the same procedure as with the electric fences.

Behind the first toaster is a key. Now you can open the door. You also have to find a padlock.

Some passwords for Ollies Follies – type these in as you begin the game.

Level 5: Frank
Level 9: Fanda
Level 13: Norbi
Level 17: Zoom

Hints needed: Password on Whirlinurd. – **A. Mitchell.**

More light on lights

AFTER reading your article about disco lights in the December 1985 issue I decided to manipulate this program for my own uses. Here is the finished copy:

```
10 POKE 54018,52
20 GRAPHICS 19
30 FOR I=3 TO 15
40 POSITION 5,I:? #6;"aa
aabbbbccccdddd eeeeffffgg
gghhhh"
50 NEXT I
60 POKE 77,0
70 POKE 708,PEEK(53775)/4
80 POKE 709,PEEK(53791)/3
90 POKE 710,PEEK(53807)/2
100 GOTO 60
```

To test this program type it in, type RUN, insert a music tape with a good beat and press PLAY on the tape recorder. Now you can sit back and watch . . . – **Ivan Mackintosh, Bulwell, Nottingham.**

File type parameter

IN the September issue of Atari User *on Page 41 you said, in answer to a question, that "There is no practical way of designing a turbo loader for the Atari without modifying the hardware". Yet on Pages 36 and 54 I see advertised turboloaders for the XL which are on tape.*

I have read that the third parameter in the open command indicates file type, does this parameter always have to be zero? The command:

XIO 18,#6,0,0,"S:"

can be used to fill shapes.

What are the 5 parameters for and does XIO have another use with a resemblance to the OPEN command?

Finally, can you save a multi-dimensional numeric array on tape– **A. Pyrski, Slough, Berks.**

● The XIO command can be used to perform most of the Input/Output functions available on the Atari. The first number specifies the operation and the next the channel number, if applicable.

The two zeros you refer to can be used to provided extra information. For example, the OPEN command can be mimicked by using:

XIO 3,#1,8,128,"C:"

Code 3 means OPEN, and we are using channel 1. The 8 sets the file for output, and the 128 tells the computer to use short Inter-Record-Gaps like a CSAVEd program does. The "C:" is just the normal filename specifier.

See the manual or other Atari Basic books for information on the various functions of XIO.

You can save a multi-dimensional array by going through FOR . . . NEXT loops and PRINTing every element to a tape file. You can then reverse the process and read them in again with INPUT.

For example, to output the data use:

```
10 DIM ARRAY(10,10)
100 OPEN #1,8,0,"C:"
110 FOR X=1 TO 10
120 FOR Y=1 TO 10
130 PRINT #1;ARRAY(X,Y)
140 NEXT Y
150 NEXT X
160 CLOSE #1
```

and to read it in again use:

```
10 DIM ARRAY(10,10)
100 OPEN #1,4,0,"C:"
110 FOR X=1 TO 10
120 FOR Y=1 TO 10
130 INPUT #1,NUMBER
140 ARRAY(X,Y)=NUMBER
150 NEXT Y
160 NEXT X
170 CLOSE #1
```

Make sure you keep the loops the same way round or you'll end up with the array reversed.

Basic on the 800XL

I OWN an Atari 800XL and 1050 disc drive which I bought about a year ago.

I was very keen on learning Basic but the Atari Basic manual which I got with the computer is about as useful as a syntax error.

Now I really want a book about Basic for the Atari 800XL. I have looked everywhere but I can't find one. I wonder if you can help me to locate one? – **I.D. Osborn, Ipswich, Suffolk.**

● The best book for your purposes is the Atari 130XE Handbook which, as we have said before, actually covers the 800XL as well as the 130XE – the only difference being two pages which deal with the 130XE's bank selected memory.

If you can't get one locally, why not try ringing one of the larger mail order companies which advertise in *Atari User* every month, such as Compumart, Software Express or Silica Shop.

Contact needed

PEN pal wanted – I am 12 years old and have a 130XE and disc drive. I would like a fellow Atari enthusiast in this country as a pen pal. Thanks for a brilliant magazine! – **John Banks, 37 Wirksworth Road, Duffield, Derbyshire DE6 4GH.**

They games they play

I AM a proud owner of a 130XE Atari computer and a 1010 tape recorder.

In your July edition you had an article that said Atari had invaded Poland and that Atari was doing quite well over there. I am pleased about this and I hope Atari can move into and do well in other countries.

I am sorry to say that US Gold has invaded Russia but in quite a different way. I am referring to Raid Over Moscow.

I am quite sure that not many people in Russia are going to want to play a game where they have to bomb their own capital city.

So if more software games like this one are released I am quite sure that Atari will not spread any further into the East. Think about it, would you buy a game called Raid Over London?

Also I would like to compliment Atari User *on a wonderful magazine. I enjoy your reviews and buy it every month.* – **Mark Hall, Great Glen, Leicester.**

Heads you lose

I BOUGHT Spellbound from Boots. It didn't work, so I got my money back. I bought it again from another shop and again it didn't work.

I did exactly what the loading instructions said so I am not the cause. I even cleaned my tape heads, but still no joy.

I wondered – does Spellbound work on an old style Atari 800?

I don't expect both of the tapes I tried were faulty.

I would like to say that Firebirds Thrust is brill, and I cannot wait to get Ninja Master when it comes out. – **Gary Hilsdon, Berinsfield, Oxon.**

● As far as we know, Spellbound should indeed work on an old 800.

The problem could be a slightly misaligned head on your tape recorder, which would cause some tapes not to work while most seem to load correctly.

Try taking your computer with you next time you go into Boots, and check the game out on one of their recorders.

Recording photographs

REFERRING to the letter from Mr Forrester in your October issue, I would be willing to put photographs on to disc/cassette.

The cost would be minimal, enough to cover disc and postage. Also if anyone is

interested in seeing some digitised pictures free, then just send a blank disc or cassette and return postage and I will put some pictures on there!

If you are interested, write to me at: Cornerways, Luxford Drive, Crowborough, East Sussex TN6 2PN or phone 08926 62698 and ask for Stephen. Hope this will help some people. – **Stephen Boxley, East Sussex.**

Colour TV resolution

I WOULD be most grateful if you could answer the following questions, the first technical, the second ethical!

I am on the verge of buying a 520STM. I do not wish to buy a monitor – is there a marked loss in resolution when using the 520 with a colour TV (14in RGB)?

The Atari ST's are obviously in a class of their own and prospective buyers should realise that they really are getting "power without the price".

However, software for the ST is not cheap and not so many years ago 8 bit machines were victims, I believe, of a similar situation.

Little interest was generated in the early days because software was expensive and scarce and a computer offering more than its rivals really had to struggle to tread water.

Is it not possible, that current ST software prices will have a similar effect and (heaven forbid) is this going to lead to piracy, just like it did in the early days of the 400/800?

It seems unfair that a computer offering so much for so little should be subjected to these possibilities when only a few years ago Atari and Atari programmers were learning their lessons the hard way.

Are these prices justified and do you think they will improve?

Thank you for a great all-round publication. – **S.E. Hislop, BFPO Ships, London.**

● You will find that the 520 STM can be used in both low and medium resolution on a colour TV, but that medium resolution text will be very hard to read and the labels below the file icons almost impossible.

However, if you can connect it via the RGB port you will notice a distinct improvement, but not to the extent that you would with a good colour monitor.

DIY modems are out

I AM thinking of building a modem for my 800XL. As I have had a considerable amount of experience in building various projects. I don't consider this to be too difficult.

However, is it legal for me to simply plug in and switch on using my new modem, or is there some kind of license that I need to obtain?

If so could you please tell me where I can get one. Also what kind of interface do I need and how much will it cost and is it possible to build one?

Finally I would like to thank you for your excellent series on Great Little Gadgets, not to mention the mains control box.

After building it I decided to set it up for a few tasks like waking me up in the morning by switching on the light, and the coffee perculator for a nice hot cuppa.

However I awoke to total chaos, finding the cat hypnotised by the flashing light, the coffee machine leaping around the room giving off a huge cloud of boiling steam which turned the room into a sauna and apart from all this I was late for work.

Anyway I seem to have got over all these minor teething problems by altering my software. Thanks for a great mag. and keep up the good work. – **Simon Rees, Ebbw Vale, Gwent.**

● The question of home built modems is a tricky one. You may feel confident in building one, but British Telecom will certainly not regard you as a qualified telephone engineer.

For this reason, no home-brew modem kits – such as the Maplin one – are ever likely to be approved and are hence illegal to use. You can easily connect one to your phone, but not legally.

If BT finds out, it may well cut you off. That said, there are lots of people who own such units and take the risk.

To connect any modem to the computer you will require an RS232 interface such as the Atari 850 and the relevant software.

If you feel confident at machine code programming, you could try writing your own RS232 software to work via the joystick ports.

Beware though – you might find that this causes the phone to jump around the room like your coffee machine did!

Missing top games

I WOULD like to know why Atari is bringing out top arcade games like Paperboy and Ghosts and Goblins for every make of computer except the Atari itself.

We Atari users are supporting Atari by buying its computers and software, only to find the better new games are only available for other machines.

Why are we getting a raw deal? Why should we buy the software – if we can find it – when Atari is backing Spectrum users and so on.

There is no wonder people turn to pirating. If Atari users stopped buying computers and software where would Atari be then? – **An Atari User, Hull.**

Back to the beginning

I HAVE just purchased an Atari 800XL pack from Dixons for my children.

While we can run the games tapes, that's as far as we can go. Having tried unsuccessfully to program games from a games book, I feel we need to understand what we are doing from the beginning.

Can you tell me whether there are any publications which are idiot-proof for the beginner with no computer knowledge at all? Also, stockists of games and so on in our area.

While you have games at £2.99 in your magazine, the only stockist I have found is Boots with a limited range starting at £6.99.

Any information you can give will be very gratefully received and hopefully allay my fears that I have made a wrong decision with this purchase. –**Mrs L.C. Dryden, Poole, Dorset.**

● If you can't find a local retailer who has the games you want, why not try looking through the pages of *Atari User* for a mail order company which advertises such items?

You will find most of them offer a speedy and efficient service, and a far larger range than most local shops ever do.

As for a good book for beginners, you might like to try Inside Atari Basic or the 130 XE Handbook – again available from most mail order dealers.

Memory map

I WOULD like to know where I could get a memory map for my Atari 800XL and how much it would cost. – **Damyan Pepper, Midsomer Norton, Bath.**

● The book you require is called Mapping the Atari (XL/XE Edition), and is published by Compute! Books at £16.95.

You could order it from your local bookshop, or get a copy from Software Express, Compumart or one of the other mail order dealers.

MicroLink in association with TELECOM GOLD

NEWSLETTER

Books and bookmen

BUYING and selling rare and out-of-print books isn't as fusty a business as it may sound – even for a firm founded when Robert Peel was prime minister.

Antiquarian bookseller Wheldon & Wesley has been trading since 1843, but is bang up-to-date when it comes to communications thanks to MicroLink.

Speed is important in locating rare publications, then buying and selling them at the right price.

And as 60 per cent of the firm's business involves dealing with people in countries all over the world, MicroLink's telex and other messaging services are proving invaluable.

"Although we specialise in natural history, we're very willing to search for any rare books other people are looking for", says director Tony Swann, a member of the family which has been running Wheldon & Wesley since the 1920s.

"And where great distances are involved, MicroLink is often the fastest and most economical means of doing the job.

"Our clients are universities, museums and libraries, private collectors and fellow dealers – and two-thirds of them are abroad.

"At present most of our business with the United States is done by telephone, but we should soon have an efficient transatlantic mailbox system via MicroLink – and perhaps even a special interest database as well".

Best foot forward

STOCK control procedures at a fast-expanding chain of footwear specialists in London used to be rather a marathon slog.

Now the system is more like a sprint – thanks to MicroLink.

Cobra Sports Shoe Shops has blossomed into an eight-store chain in as many years, selling to top international athletes as well as spare-time joggers.

It all adds up to a mountain of shoe leather – or rather spikes and rubber.

Before MicroLink, daily stock reports were written by hand and the sheets sent by next available delivery van to the firm's head office, sometimes two or three days later.

Now the information from each shop goes directly every night onto Cobra's MicroLink mailbox for retrieval next morning and processing on the firm's IBM computer. Up-to-the-minute stock control has been achieved without great expense – instead of a micro each store uses a Psion Organiser.

"This gives us simple one-button operations that are easy for the staff to pick up", says Cobra systems manager Daniel Brown.

"And I've successfully written an autodial file-sending procedure in OPL on my Psion which speeds up the process even more".

Link grows

MICROLINK subscribers can now communicate directly with two more countries through the world's biggest electronic mail and messaging network Dialcom.

Italy and Japan have joined the system, bringing to 14 the number of countries offering this global service.

More free software

MICROLINK'S telesoftware library is being reorganised and considerably extended.

The programs run on five types of computer – BBC Micro, Apple, Electron, Atari and Amstrad.

There are now nearly 150 free programs in the MicroLink telesoftware library and this number will be substantially increased during the next few months.

Going with a bang

HAVING survived his childhood hobby of making fireworks – "somewhat luckily", he says – Jon Culverhouse went on to other things.

But he never lost his fascination for colourful explosions and now, with a little help from MicroLink, he's creating them all over the country.

As boss of Fantastic Fireworks, Jon was responsible for something like 65,000 "bangs" around Britain this November 5th.

For the past two years Jon has been selling fireworks imported from places like Germany, Spain – and even China where pyrotechnics originated.

He keeps in touch with his suppliers via MicroLink's telex facilities and uses electronic mail to publicise his services.

These include packaged displays costing from £80 for a family bonfire party to £5,000 for, say, a town's Royal Wedding celebrations.

"I've found that sending information via MicroLink is the most effective method of getting publicity for my company in the media", says Jon.

"My displays have already been featured on Saturday Superstore and Pebble Mill at One as a result".

Fly me...

THE Official Airline Guide database available on MicroLink includes information about nearly 30,000 hotels as well as flight and fare details for more than 750 airlines.

The coverage spans 17,000 hotels and motels in North America, more than 9,000 in Europe and more than 2,500 in the Far East and Pacific area.

Details displayed include the full postal address, telephone and telex numbers, and the range of rates, plus an official classification in most cases.

YOUR chance to join MicroLink – turn to Page 16

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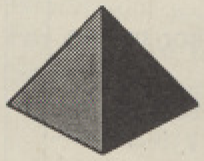
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KEYBOARD DEFINER from F. Van GILST

THIS five-liner from a reader in Holland not only lets you modify the keyboard definition table but also adds five useful edit functions.

Save the program after you have typed it in and run it. Now press the key that you wish to redefine. The program will respond with "Give Character". You now type in the character that you wish to store in this key and the program will do the rest.

For example you could press Shift+Space and enter a semi-colon when asked "Give Character". From then every time you press Shift +Space a semi-colon will be printed on the screen.

The program also gives you five bonus editing functions:

Control+4 moves the cursor to the upper left of the screen.

Control+5 moves the cursor to the lower left of the screen.

Control+6 moves the cursor to the beginning of a line.

Control+7 moves the cursor to the end of a line.

Control+8 turns the keyboard click on and off.

The program will only operate on XL and XE machines and you should press Reset before you load and run it.

The keyboard table that you have redefined can also be saved for use later by entering the following:

DOS
K
D:KEYDEF.BIN,600,6C9,600

To reload the table:

DOS
L
D:KEYDEF.BIN

The keys will now be redefined as before.

```
1 DATA 104,160,191,177,121,153,9,6,136
,192,255,208,246,96,1697,142,1700,144,
1702,143,1724,145,1726,137,169,9,133
2 FOR L=1738 TO 1751:READ B:POKE L,B:N
EXT L:X=USR(1738):OPEN #1,4,0,"K:":FOR
 L=1 TO 5:READ A,B:POKE A,B:NEXT L
3 A=PEEK(764):IF A=255 THEN 3
4 POKE 764,255:? "GIVE CHARACTER":GET
#1,K:POKE 1545+A,K:POKE 764,255:GOTO 3
+2*(K=155)
5 POKE 121,9:POKE 122,6:FOR L=1536 TO
1544:READ B:POKE L,B:NEXT L:CLOSE #1:E
ND :DATA 121,169,6,133,122,96
```

Get it right!

LINE CHSUM	LINE CHSUM	LINE CHSUM
1 16710	2 19555	3 4896
4 15265	5 18341	

LINE BREAKDOWN

1: Contains the data for the program.
2: Pokes in the data and opens a channel to the keyboard.
3: Waits for a key to be pressed.
4: Inputs the replacement character.
5: Replaces the character in the table.

JOYSTICK TEST from WILLIAM ANDERSON

JOYSTICKS can be very unreliable and it is often difficult to tell whether the program or joystick is at fault. To find out easily, type-in and run Joystick Test.

LINE BREAKDOWN

10: Initialises the screen and asks you which joystick port you wish to test.
20: Checks the port number is valid and checks for a key press.
30: Reads the description from line 50 for the current value of *STICK(P)*.
40: Informs you if the button is pressed.
50: Data statements for descriptions.

```
10 DIM A$(15):OPEN #1,4,0,"K:":GRAPHIC
S 0:POKE 752,1:POSITION 11,10:? "WHICH
 PORT NUMBER?";:GET #1,P:P=P-48:? "↰"
20 IF P<0 OR P>3 OR PEEK(764)<>255 THE
N POKE 764,255:RUN
30 RESTORE :ST=STICK(P):FOR I=1 TO ST:
READ A$:NEXT I:POSITION 0,11:? "↰":POS
ITION (40-(LEN(A$)))/2,11:? A$
40 IF STRIG(P)=0 THEN POSITION 13,8:?
"BUTTON PRESSED"
50 GOTO 20:DATA , , , ,RIGHT-DOWN,RIGH
T-UP,RIGHT, ,LEFT-DOWN,LEFT-UP,LEFT, ,
DOWN,UP,CENTRE
```

Get it right!

LINE CHSUM	LINE CHSUM	LINE CHSUM
10 19472	20 9783	30 19340
40 9721	50 17061	

RIVER from A.P. PICKETT

RIVER is a simple game in which you control a boat using a joystick in port one.

Moving the boat from side to side, you see how far you can get up the ever narrowing river.

LINE BREAKDOWN

10: Sets up the variables.
20: Puts the boat on the screen and reads the joystick.
30: Randomly decides on the width of the river.
40: Advances your points.
50: Tells you how far you travelled.

```
10 P=20:DIM S$(8),B$(39):B$(1)="█":B$(
39)="█":B$(2)=B$:S$="        ":X=16:PO
KE 752,1:M=PEEK(88)+PEEK(89)*256:R=0
20 POSITION 0,23:? B$;:POSITION X,23:?
 S$:S=STICK(0):P=P+(S=7)-(S=11):D=PEEK
(M+P):X=X+RND(0)*2*(X+LEN(S$)<38)
30 POKE M+P,54:X=X-RND(0)*2*(X>8):IF T
>200 AND LEN(S$)>3 THEN T=0:S$=S$(1,LE
N(S$)-1)
40 SETCOLOR 1,0,10:SETCOLOR 2,7,4:T=T+
5:R=R+10:IF D=0 THEN 20
50 ? "↰":POSITION 2,8:? "YOU TRAVELLED
 ";R;" M DOWN THE RIVER":FOR I=1 TO 80
0:NEXT I:? "↰":RUN
```

Get it right!

LINE CHSUM	LINE CHSUM	LINE CHSUM
10 17712	20 18976	30 14229
40 10930	50 17546	

DECIMAL TO BINARY CONVERTER

FROM A.R. WEIR

THIS small loader program sets up a machine code routine which will give you an extra Basic command that converts decimal numbers into binary strings.

For example if you enter the number 2 and call the routine naming *A$*, then the routine will place "00000010" into *A$*.

Type in the program and remember to save it before you attempt to run it. After you run the program, you will be able to use this new command:

X=USR(1741,A,B)

Here *X* is a dummy variable, 1741 is the address of the machine code routine, *A* is the number to convert and *B* is the address of the string which will hold the binary number. For example to convert 2 into *C$* in binary, you would use:

X=USR(1741,2,ADR(C$))

LINE BREAKDOWN

1: Identifies the program.
2: Reads and pokes in the machine code.
3: Prints out all the numbers between 0 and 255 as a demonstration.
4: First chunk of data.
5: The remainder of the machine code data.

```
1 REM Decimal-Binary Converter
2 CLR :DIM BN$(10):BN$="00000000":REST
ORE 4:FOR E=1741 TO 1783:READ D:POKE E
,D:NEXT E
3 FOR E=0 TO 255:X=USR(1741,E,ADR(BN$)
):? BN$:NEXT E:END
4 DATA 104,104,104,133,203,104,133,205
,104,133,204,160,0,169,48,145,204,200,
192,8,208
5 DATA 249,169,1,160,7,36,203,240,6,17
0,169,49,145,204,138,136,10,192,255,20
8,240,96
```

Get it right!

LINE	CHSUM	LINE	CHSUM	LINE	CHSUM
1	13735	2	14993	3	10834
4	12492	5	12347		

More special to Atari



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Mercenary was a smash hit when it was released last year. Now Novagen have produced a new dataset to load into Mercenary. The Second City is crammed with even greater challenges, and has moved our independent reviewer to describe it as: *"A classic game . . . a heady mix of flight simulation, strategy and arcade action using incredibly fast 3D vector graphics".*

8 bit	✓
ST	✗

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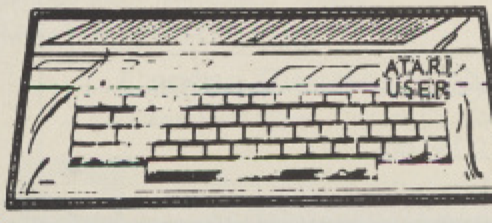
To play The Second City you must also have a copy of Mercenary. Both programs require 48k and work with the Atari 400, 800 and the XL and XE range.

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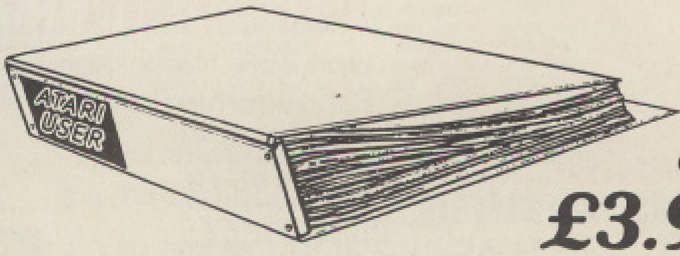
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8 bit	✓
ST	✗



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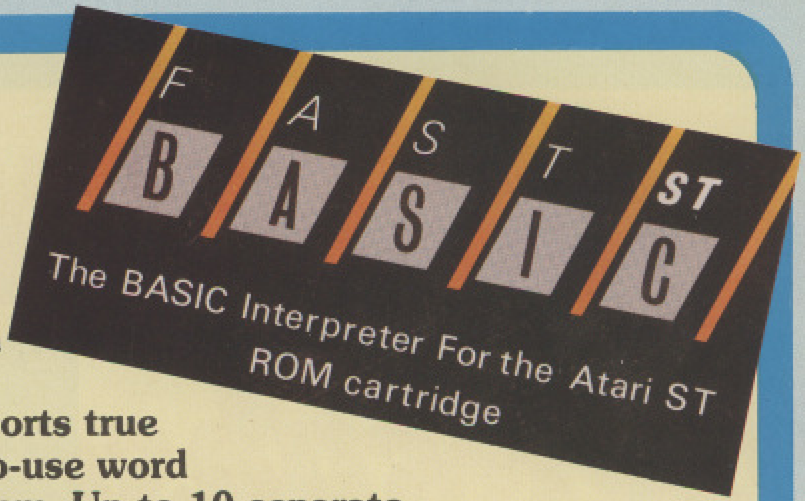
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8 bit	✗
ST	✓



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